ORIGINAL

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

PRESIDIO COMPONENTS, INC., Plaintiff, vs. AMERICAN TECHNICAL CERAMICS CORP., Defendants.	Case No. 3:08-cv-00335-IEG-NLS VOLUME I
AMERICAN TECHNICAL CERAMICS CORP., Counter-Claimant, vs. PRESIDIO COMPONENTS, INC., Counter-Defendant.	

DEPOSITION OF:

GARY JAMES EWELL

FRIDAY, AUGUST 1, 2008

9:32 A.M.

Reported by: SUSAN LYNN POBOR

CSR No. 5132

Deposition of GARY JAMES EWELL, the witness, taken on behalf of the Defendant and Counter-Claimant, AMERICAN TECHNICAL CERAMICS CORP., on Friday, August 1, 2008, 9:32 a.m., at 2029 Century Park East, Suite 1370, Los Angeles, California, before SUSAN LYNN POBOR, CSR No. 5132, pursuant to Notice.

APPEARANCES OF COUNSEL:

For Plaintiff and Counter-Defendant, PRESIDIO COMPONENTS, INC.:

WOOD HERRON & EVANS, LLP
BY: BRETT A. SCHATZ, ESQ.
2700 Carew Tower
441 Vine Street
Cincinnati, Ohio 45202-2917
(513) 241-2324

APPEARANCES (CONTINUED):

For Defendant and Counter-Claimant, AMERICAN TECHNICAL CERAMICS CORP:

MINTZ LEVIN COHN FERRIS GLOVSKY AND POPEO
BY: TIMUR E. SLONIM, ESQ.
- and -
PETER F. SNELL, ESQ.
Chrysler Center
666 Third Avenue
New York, New York 10017
(212) 692-3000

VIDEOGRAPHER: DANIEL ROCCO

I N D E X

WITNESS	EXAMINATION	PAGE
GARY JAMES EWELL	BY MR. SLONIM	7

E X H I B I T S

No.	Description	PAGE
Exhibit 1	Notice Of Deposition of Dr. Gary Ewell	8
Exhibit 2	Declaration of Gary James Ewell	11
Exhibit 3	United States Patent No. US 6,816,356 B2	34
Exhibit 4	Drawing	88
Exhibit 5	United States Patent No. US 6,545,854 B2	116
Exhibit 6	Claim Construction Order	129
Exhibit 7	Formula	206
Exhibit 8	Drawing	257
Exhibit 9	Drawing	264
Exhibit 10	Drawing	266

I N D E X (CONTINUED)

INFORMATION REQUESTED

(NONE)

QUESTIONS INSTRUCTED NOT TO ANSWER

(NONE)

FRIDAY, AUGUST 1, 2008
LOS ANGELES, CALIFORNIA
9:32 A.M.
---o0o---

09:32:13 THE VIDEOGRAPHER: Here begins Volume I, videotape Number 1, in the deposition of Gary Ewell, in the matter of Presidio Components, Inc., versus American Technical Ceramics, filed in the United States District Court, Southern District of California.

09:32:41 Today's date is Friday, August 1st, 2008. The time on the video monitor is 9:32 hours.

09:32:48 The video operator today is Daniel Rocco, contracted by Merrill Legal Solutions.

09:32:53 This video deposition is taking place at 2029 Century Park East, Suite 1370, Los Angeles.

09:33:01 Counsel, please identify yourselves and state whom you represent.

09:33:04 MR. SLONIM: Timur Slonim from the law firm of Mintz Levin on behalf of Defendant American Technical Ceramics.

09:33:13 MR. SNELL: Peter Snell, also with Mintz Levin on behalf of American Technical Ceramics.

09:33:19 MR. SCHATZ: Brett Schatz with Wood Herron & Evans on behalf of the plaintiff, Presidio Components, 09:33:26 Inc.

09:33:26 THE VIDEOGRAPHER: The court reporter today is
09:33:29 Susan Pobor of Merrill Legal Solutions.

09:33:31 Will the reporter please swear in the
09:33:32 witness.

09:33:32 GARY JAMES EWELL,
09:33:32 having been first duly sworn, was
09:33:32 examined and testified as follows:

09:33:32

09:33:33 EXAMINATION

09:33:33 BY MR. SLONIM:

09:33:42 Q. Good morning, Dr. Ewell.
09:33:44 A. Good morning.
09:33:44 Q. Would you please state your full name
09:33:50 for the record?
09:33:52 A. Gary James Ewell.
09:33:54 Q. And where do you reside?
09:33:56 A. I currently reside at 10533 Ayers,
09:34:03 A-y-r-e-s, Avenue, Los Angeles, 90064.
09:34:06 Q. How long have you lived at that address?
09:34:10 A. Approximately four to five years.
09:34:13 Q. And where are you currently employed?
09:34:17 A. I'm -- currently do part-time work for
09:34:22 the Aerospace Corporation.
09:34:25 Q. So if I understand you correctly, you're

09:34:29 not employed full time now?
09:34:31 A. That is correct. I'm retired.
09:34:34 Q. I see.
09:34:35 And when in 2007 did you retire, what
09:34:39 month?
09:34:41 A. August 1st.
09:34:41 Q. August 1st.
09:34:44 Congratulations. It has been a year.
09:34:47 A. Thank you.
09:34:48 Q. Did you enjoy that year?
09:34:50 A. Yes.
09:34:50 Q. Excellent. Excellent.
09:34:53 And what kinds of projects are you still
09:34:55 working for Aerospace Corp.?
09:34:59 A. I'm primarily involved with independent
09:35:02 review teams for the government in looking over and
09:35:10 technical auditing of the manufacturer of satellites
09:35:15 and components, thereon.
09:35:16 Q. Okay. Does that relate to what you have
09:35:20 worked on at Aerospace before retirement?
09:35:22 A. Yes.
09:35:22 (Whereupon Exhibit 1 was marked for
09:35:22 identification)
09:35:22 BY MR. SLONIM:
09:35:22 Q. Okay. Would you please take a look at

09:35:32 Exhibit 1?
09:35:36 Here's a copy.
09:35:37 Would you identify that document for the
09:35:39 record, please?
09:35:40 A. I do see Exhibit 1 in front of me.
09:35:43 Q. Would you identify what that document
09:35:46 is?
09:35:48 A. I see in bold print to the right side of
09:35:52 Page 1, "Notice Of Deposition of Dr. Gary Ewell".
09:35:57 Q. Have you seen this document before?
09:35:59 A. No, I haven't --
09:36:01 Q. Before this deposition?
09:36:02 A. No, I have not.
09:36:03 Q. Okay.
09:36:04 MR. SCHATZ: Mr. Slonim, I'll just state for
09:36:07 the record at least that my copy is only of Pages 1
09:36:10 and 3.
09:36:13 THE WITNESS: The same with my copy.
09:36:20 MR. SLONIM: I believe you are correct.
09:36:24 Q. Let me show you Page 2 of that document,
09:36:28 which should be inserted between Pages 1 and 2.
09:36:34 MR. SCHATZ: Perhaps just so the record is
09:36:36 clear, the court reporter might have the ability to
09:36:40 remove the staples and complete the exhibit.
09:36:43 MR. SLONIM: I think that would be a good

09:36:45 idea.

09:36:50 Q. So if I understand you --

09:36:51 I'm sorry to interrupt you.

09:36:54 You haven't seen this document before?

09:36:56 A. Correct.

09:36:56 MR. SCHATZ: Again, before we go on, I thought
09:36:58 the best way to do this is to have the court reporter
09:37:02 make the exhibit complete, and then continue with your
09:37:05 questions.

09:37:05 BY MR. SLONIM:

09:37:19 Q. Why don't we go to a different subject.

09:37:22 What did you do to prepare for this
09:37:24 deposition?

09:37:26 A. To prepare for this deposition, I looked
09:37:30 at some of the -- I looked at my declaration, and some
09:37:37 of the documents stated in that declaration that I had
09:37:41 used to prepare it.

09:37:42 Q. Do you remember which documents are the
09:37:47 ones that you've used to prepare the declaration
09:37:49 you've reviewed?

09:37:51 A. I have reviewed I believe two filings on
09:37:56 behalf of ATC: One in June, and one in July of this
09:38:02 year.

09:38:03 Q. Did you review any of the filings on
09:38:08 behalf of Presidio?

09:38:10 A. I'd have to see a list of those documents in my declaration to --
09:38:19 Q. It should not be a problem.
09:38:19 (Whereupon Exhibit 2 was marked for identification)
09:38:19 BY MR. SLONIM:
09:38:29 Q. I hope this document is now complete.
09:38:31 I'm placing before you Exhibit 2 --
09:38:34 Here's a your copy for counsel.
09:38:38 Would you please review that document and then identify it for the record?
09:38:45 A. On the second page of Exhibit 2 appears to be the first page of my declaration. I notice this document is totaling 19 pages long, and it has both my declaration -- I can't tell whether it's complete. I assume it is -- plus my curriculum vitae or resume.
09:39:17 Q. Okay. And did you prepare that curriculum vitae specifically for the purpose of submitting this declaration?
09:39:25 A. I brought it up to date.
09:39:27 Q. When did you bring it up to date?
09:39:32 A. During the time before making the declaration.
09:39:37 Q. I see.
09:39:38 A week or two before?

09:39:39 Is that --
09:39:41 A. Yes.
09:39:41 Q. Okay. And what did you do to bring it
09:39:45 up to date?
09:39:47 A. Two things:
09:39:48 One, I indicated that I had retired, the
09:39:55 last version shows I was working full time.
09:39:57 And secondly, I made sure that the list
09:40:00 of publications was reasonably up to date.
09:40:06 Q. Okay. And you believe that list of
09:40:07 publications is accurate?
09:40:09 A. Reasonably accurate.
09:40:12 Q. What would you need to do to make sure
09:40:14 it is accurate as opposed to reasonably accurate?
09:40:20 A. I would need to look through files at
09:40:27 the Aerospace Corporation who records all the
09:40:33 publications I have, because I've got to get clearance
09:40:36 for them, and to see whether they contain publications
09:40:39 I might have actually published but which are not
09:40:43 recorded here.
09:40:43 Q. I see.
09:40:47 So in the Aerospace --
09:40:49 Do you have a copy of that same file in
09:40:51 your home, all of your publications that you would be
09:40:53 able to review?

09:40:57 A. By that, I'm talking about clearances.
09:41:03 Because I work for a company which has secret and top
09:41:08 secret clearances involved. Any of my publications
09:41:14 must be cleared to be published.
09:41:17 And if I looked at the clearance record
09:41:19 that the company has, I could see if there are
09:41:22 publications included which are not listed here.
09:41:25 Q. I see.
09:41:28 So all of your publications for the
09:41:31 last, lets say, 20 years have been submitted to
09:41:37 Aerospace Corporation for clearance first before they
09:41:42 were submitted to a journal or --
09:41:44 A. I believe that to be true, yes.
09:41:46 Q. That was a requirement of your job?
09:41:48 A. Yes.
09:41:49 Q. Did you --
09:41:50 What kind of clearance did you have at
09:41:53 Aerospace Corporation?
09:41:56 A. I had in the last years of my employment
09:41:58 a top secret clearance.
09:42:00 Q. Do you still maintain that clearance
09:42:05 today?
09:42:05 A. I still do, yes.
09:42:06 Q. And part-time employees are allowed to
09:42:10 have top secret clearance?

09:42:12 Is that --

09:42:14 A. Until the term of that clearance
09:42:17 expires -- I believe it's five years -- and then a
09:42:21 decision is made as to whether it's warranted to be
09:42:24 reapplied for.

09:42:25 Q. I see.

09:42:27 And when was the -- And when is the term
09:42:29 of your current top secret clearance -- when does that
09:42:35 expire, if you remember?

09:42:36 A. I do not know, no. I'd have to go back
09:42:39 and look at papers.

09:42:39 Q. Okay. Okay. But otherwise, once all of
09:42:43 your papers have been cleared by
09:42:46 Aerospace Corporation, then those papers, you can
09:42:52 carry out of Aerospace Corporation. And presumably,
09:42:56 you'll have them in your possession in your home
09:43:00 office.

09:43:00 A. That is true.

09:43:01 Q. Okay. Okay. And has it ever happened
09:43:04 that Aerospace Corporation has not approved a paper of
09:43:09 yours for public dissemination?

09:43:13 A. Yes.

09:43:13 Q. On how many occasions?

09:43:20 A. Perhaps one or two. It's been long
09:43:23 enough time that I forget the exact count.

09:43:26 Q. And in the last five years, has it
09:43:28 happened?
09:43:29 A. No.
09:43:29 Q. Okay. And so for how long did you
09:43:40 review your declaration and the documents that you've
09:43:45 used to prepare this declaration, and after you
09:43:49 finished the declaration in preparation for the
09:43:51 deposition, how long approximately did you spend?
09:43:53 A. Eight to ten hours.
09:43:56 Q. Was it yesterday?
09:43:58 A. Primarily, during the last week.
09:44:00 Q. And the last week would be the week of
09:44:07 July 26?
09:44:09 Is that --
09:44:10 A. I'd have to recheck with the calendar,
09:44:12 but about that time, including the weekend before.
09:44:17 Q. Okay. And did you do anything this week
09:44:20 to prepare for this deposition, starting Monday, I
09:44:24 think it was, July 28?
09:44:26 A. I did some reading with that, and I did
09:44:31 have a discussion with legal counsel.
09:44:34 Q. And who was that legal counsel?
09:44:36 A. That was Mr. Brett Schatz to my right.
09:44:40 Q. And where were you when you had that --
09:44:46 Was it only one discussion with

Mr. Schatz that you had?

A. There was a discussion I believe by telephone, and then one in person.

Q. When did the discussion by telephone take place?

A. It was over the past weekend. I'd have to look at my notes to be sure which day it was, whether it was a Saturday or Sunday or a Friday night.

Q. How long approximately was that discussion?

A. One hour.

Q. And who called who?

A. I do not recall.

Q. That's fine.

And in terms of the notes, do you have --

Did you take notes of that conversation with legal counsel?

A. Parts of it, yes.

Q. And do you still have them in your possession?

A. Yes.

Q. And they're at your house?

A. Yes.

And I may only have part of the notes.

09:45:45 I am careful to shred stuff which doesn't matter.
09:45:49 Q. I see. I see.
09:45:53 Did you shred anything of the notes that
09:45:57 you've taken of that conversation with legal counsel?
09:46:01 A. I don't believe so, but I'd have to look
09:46:04 at those notes physically to --
09:46:08 Q. And how would you be able to tell
09:46:11 whether -- by looking at the remaining notes, I guess,
09:46:13 whether something was discarded or shredded?
09:46:20 A. By looking at the remaining material in
09:46:22 context and seeing if something did not flow --
09:46:27 Q. Okay.
09:46:28 A. -- from page to page.
09:46:29 Q. Okay. I guess it would refresh your
09:46:32 recollection about the conversation, and then you
09:46:34 would be able to say whether there was something
09:46:36 discussed between the notes you took that are
09:46:39 remaining.
09:46:40 Is that --
09:46:41 A. Correct.
09:46:41 Q. Okay. And then -- And do you date your
09:46:46 notes in terms of when you take them with a date of
09:46:50 the occurrence of that conversation?
09:46:52 A. Often, they tend to be a more continuous
09:46:57 running record. And I at least put a title to them,

09:47:03 which helps me recall which exact day.
09:47:09 Q. I see.
09:47:09 A. So they may not be dated.
09:47:12 Q. Do you maintain like a Daytimer,
09:47:16 electronically or on paper, where you, you know,
09:47:18 pencil appointments in or certain planned
09:47:21 conversations or meetings?
09:47:23 A. I do.
09:47:23 Q. And did you --
09:47:26 Was that call with legal counsel
09:47:28 scheduled beforehand?
09:47:33 A. I believe. I'm not sure until I look at
09:47:37 my Daytimer that it was not scheduled far enough
09:47:42 beforehand to be actually entered on it.
09:47:44 Q. Okay. Okay. That's fine.
09:47:46 And after that conversation,
09:47:50 approximately over the weekend, when did you meet with
09:47:54 counsel in person?
09:47:57 A. Yesterday afternoon.
09:47:58 Q. And where were both of you at that time?
09:48:03 A. In the hotel he is currently staying at.
09:48:07 Q. And which hotel is that?
09:48:09 A. I believe there's a Holiday Inn Express
09:48:12 on Olympic Boulevard.
09:48:14 Q. Is that nearby your house?

09:48:17 A. Yes.
09:48:17 Q. And at what time of the day yesterday
09:48:20 did you meet with him?
09:48:22 A. Starting at 1:30 --
09:48:24 Q. And when did that --
09:48:25 A. P.m.
09:48:26 Q. P.m.
09:48:27 In the afternoon?
09:48:27 A. Yes.
09:48:27 Q. And what did you do in the morning of
09:48:30 yesterday before that meeting?
09:48:33 A. I flew in from San Jose.
09:48:37 Checked out of a motel room I was in,
09:48:40 went to the airport, caught a flight, got home,
09:48:44 unpacked.
09:48:45 Q. I see.
09:48:46 And were you traveling on business or
09:48:48 pleasure to San Jose?
09:48:50 A. Business.
09:48:50 Q. Was that related to the part-time
09:48:52 employment --
09:48:52 A. Yes.
09:48:52 Q. -- at Aerospace?
09:48:54 A. Yes, it was.
09:48:55 Q. Okay. And that trip started on Monday?

09:48:58 A. That trip started on Monday afternoon.
09:49:00 Q. Okay. And how long did that meeting
09:49:04 with legal counsel yesterday last?
09:49:08 A. Approximately three hours.
09:49:10 Q. So around 4:30, 5:00, it ended?
09:49:15 A. I believe it was more like 4:00 to 4:30.
09:49:18 Q. Okay. Did legal counsel --
09:49:21 Was anybody else present at that
09:49:23 meeting?
09:49:24 A. Not for the continuous time of the
09:49:26 meeting, no.
09:49:27 Q. Did somebody step into the meeting for a
09:49:31 part of it?
09:49:34 A. Let me state we were meeting in a room
09:49:37 at the hotel, and various people incidentally entered
09:49:42 and left the room without being at the table or part
09:49:47 of the conversation.
09:49:48 Q. I see.
09:49:51 I would venture a guess, are you
09:49:53 referring to the hotel employees who were cleaning,
09:49:56 bringing things, lunch?
09:49:58 Is that --
09:49:58 A. Primarily, yes.
09:49:59 Q. Okay. Was there anybody else who was
09:50:01 not a hotel employee who was at the meeting at any

09:50:07 time?

09:50:07 A. Not to the best of my knowledge.

09:50:08 Q. Was anybody on the phone with the two of
09:50:14 you when the meeting was taking place?

09:50:16 A. No.

09:50:16 Q. You didn't call anybody from that
09:50:20 meeting?

09:50:21 A. That is correct.

09:50:21 Q. Did Mr. Schatz call anybody?

09:50:23 Did you observe him calling anybody from
09:50:25 that meeting?

09:50:26 A. No, I did not.

09:50:27 Q. And did Mr. Schatz tell you about the
09:50:33 deposition procedures?

09:50:35 A. Yes, he --

09:50:36 MR. SCHATZ: I'm going to object here.

09:50:38 You're talking about work product
09:50:40 privilege. That is not appropriate.

09:50:42 MR. SLONIM: I believe, Mr. Schatz, we're
09:50:45 talking about a testifying expert witness. And I
09:50:49 don't think there is any privilege or work product
09:50:52 applicable to the testifying expert witnesses.

09:50:56 So I would ask you that you withdraw
09:51:01 your objection.

09:51:03 Are you objecting or instructing the

09:51:06 witness not to answer?

09:51:06 MR. SCHATZ: I'm objecting.

09:51:08 But if you agree that there is no
09:51:10 privilege associated with dialogue with expert
09:51:12 witnesses, that's fine. Feel free.

09:51:17 MR. SLONIM: Is that your understanding?

09:51:19 MR. SCHATZ: I'm just making a comment.

09:51:23 If you agree that there's no privilege
09:51:25 associated with that, and that's including with
09:51:28 respect to your witnesses, then that's fine with us.

09:51:33 MR. SLONIM: I think we'll abide by the
09:51:36 Federal Rules of Civil Procedure.

09:51:38 MR. SCHATZ: And so I would assume that
09:51:39 you will follow what you understand to be the
09:51:42 Federal Rules of civil procedure as it pertains to
09:51:47 this deposition.

09:51:47 And that being said, feel free to go on.

09:51:47 BY MR. SLONIM:

09:51:56 Q. And with that, let me repeat the
09:51:59 question. Let me --

09:52:01 Actually, I think it was answered.

09:52:04 What did Mr. Schatz tell you about the
09:52:06 deposition procedures at the yesterday meeting that
09:52:10 you had with him?

09:52:14 A. Generally, what was involved in terms of

09:52:17 the mechanics of the deposition.
09:52:22 Q. Have you been --
09:52:24 Have you ever been deposed before this
09:52:26 deposition?
09:52:28 A. Once, possibly twice.
09:52:32 Q. And when was the last time that you were
09:52:35 deposed before this deposition?
09:52:37 A. I believe it was 1992, 1993 time frame.
09:52:42 Q. And do you remember what the name of
09:52:45 the -- what the parties were in that case, what the
09:52:47 names of the parties were?
09:52:50 A. Not off the -- Not extemporaneously.
09:52:55 I'd have to refresh my memory.
09:52:57 Q. Okay. That's fine.
09:52:59 Were you an expert witness in that case,
09:53:01 also?
09:53:01 A. Yes, I was.
09:53:02 Q. And what kind of subject matter did that
09:53:05 case involve?
09:53:07 A. That involved, to my understanding,
09:53:12 questions about the expected reliability of
09:53:18 capacitors.
09:53:18 Q. I see. I see.
09:53:22 And did you testify for the plaintiff or
09:53:25 defendant in that case?

09:53:29 A. For the plaintiff.
09:53:34 Q. And the plaintiff was --
09:53:35 If you don't remember the name, if you
09:53:37 could --
09:53:37 Was it a manufacturer of capacitors or a
09:53:41 purchaser of capacitors?
09:53:43 How would you characterize that?
09:53:44 A. A purchaser and user of capacitors.
09:53:47 Q. I see.
09:53:47 And the defendant was a supplier of
09:53:50 capacitors?
09:53:51 A. Was another purchaser and user of
09:53:56 capacitors.
09:53:59 Q. Okay. It was not a patent case?
09:54:02 A. No, it was not.
09:54:03 Q. It was just regular contract dispute,
09:54:06 commercial dispute?
09:54:08 A. Yes, it was.
09:54:08 Q. About reliability of the capacitors?
09:54:12 A. Yes.
09:54:12 Q. Okay. And you said possibly you were
09:54:18 deposed a second time before that.
09:54:22 When approximately did that happen?
09:54:24 A. 1984.
09:54:26 Q. And what kind of case was that?

A. Another case with capacitors.
Q. Was it a patent case?
A. No, it was not.
Q. Okay. And in that case, you were --
In the 1984 case, do you remember the names of the parties?
A. No, I do not.
Q. And in that case, did you testify for plaintiff or defendant, to the best of your recollection?
A. Plaintiff.
Q. And was it the same plaintiff that was in the 1991 case?
A. No, it was not.
Q. And kind of functionally defining the plaintiff, was it a supplier or purchaser of capacitors, the plaintiff?
A. Purchaser.
Q. Okay. And the defendant in that 1984 case was another purchaser?
A. Another purchaser of capacitors.
Q. Okay. And what was the kind of subject matter of that case?
What was --
A. Again, the expected reliability of a

09:55:32 particular capacitor and a particular application.
09:55:37 Q. Okay. Have you ever testified --
09:55:41 And in those two cases, in '84 and '91,
09:55:44 did you submit a written expert report or have you had
09:55:49 to sign a declaration?
09:55:51 A. I believe not.
09:55:54 Q. Okay. Have you testified at trial in
09:55:57 either of those two cases?
09:55:59 A. No.
09:55:59 Q. Do you know how they were resolved?
09:56:05 A. The latest one, there was -- I believe
09:56:10 the case was submitted to a trial or a pseudo jury who
09:56:19 said if they were the real jury, what would they
09:56:21 arrive at.
09:56:25 And I believe the first one was settled
09:56:27 out of court.
09:56:28 Q. Okay. And did you testify before that
09:56:31 pseudo jury?
09:56:32 A. No.
09:56:32 Q. Okay. If you look on page -- on the --
09:56:50 In the header, it says "Page 15 of 19" of Exhibit 2,
09:56:55 which is your declaration.
09:56:56 I see a couple of cases mentioned there
09:57:00 as an expert witness experience.
09:57:02 Does that refresh your recollection

09:57:05 about those two cases?
09:57:07 Are these the cases you've testified
09:57:09 just now about?
09:57:10 A. Yes.
09:57:10 Q. And since '92 or '93, you haven't been
09:57:16 an expert witness in a court case?
09:57:18 A. That is correct.
09:57:19 Q. Have you ever been approached about
09:57:25 being an expert witness for a court case but, let's
09:57:29 say, not hired or you didn't want to get involved for
09:57:32 some reason?
09:57:33 A. No.
09:57:33 Q. Okay. And while you were an expert
09:57:36 witness in these two cases, you were an employee of
09:57:40 Aerospace Corporation?
09:57:41 A. That is correct.
09:57:42 Q. And did you have to get clearance from
09:57:45 Aerospace Corporation in order to be a participant in
09:57:47 that -- in those court proceedings?
09:57:51 A. I had to check to see whether there
09:57:55 would be an apparent conflict of interest with the
09:57:59 work of Aerospace Corporation.
09:58:00 Q. And who at Aerospace Corporation
09:58:03 conducted that inquiry?
09:58:06 A. It was more my talking with a member of

09:58:09 the legal staff.
09:58:12 Q. And what types of conflict of interest
09:58:17 were you concerned about with those two cases, an
09:58:20 appearance of conflicts?
09:58:22 What would be a conflict?
09:58:24 A. If one of the customers of
09:58:35 Aerospace Corporation were currently using or involved
09:58:40 with one of the manufacturers or parties involved.
09:58:49 Q. And by "customers of
09:58:52 Aerospace Corporation," what do you mean?
09:58:57 Who are the customers of
09:58:58 Aerospace Corporation?
09:59:00 Could you name, let's say, the top five
09:59:02 customers?
09:59:04 A. The top three customers I can name would
09:59:08 be the Department of Defense, NASA, and the
09:59:20 national Reconnaissance Office.
09:59:23 Q. Are any of the --
09:59:31 To your knowledge, are any of the
09:59:33 Aerospace Corporation customers commercial entities?
09:59:42 A. I believe commercial entities have from
09:59:47 time-to-time utilized. But they would be in the less
09:59:50 than one percent and it would vary from year to year.
09:59:54 Q. I see.
09:59:55 So the primary customers of

09:59:58 Aerospace Corporation are U.S. Government agencies?
10:00:05 A. That is correct.
10:00:05 Q. On the defense side, defense,
10:00:07 intelligence type of, space --
10:00:10 A. Right.
10:00:11 Q. Okay. And by "customers of
10:00:14 Aerospace Corporation", do you mean
10:00:16 Aerospace Corporation manufacturers products for
10:00:22 Department of Defense?
10:00:24 A. Aerospace Corporation is what is called
10:00:28 an FFRDC, Federally Funded Research And Development
10:00:35 Center. It is extremely rare for us to manufacture
10:00:42 anything except state of the art, one-time instruments
10:00:48 or experiments for which there's no other source
10:00:52 available.
10:00:55 Q. I see.
10:00:57 So what products, I guess, does
10:01:00 Aerospace Corporation sell to Department of Defense,
10:01:04 if you rarely manufacture anything?
10:01:07 A. We primarily sell independent assurances
10:01:15 that some product either meets its requirements or
10:01:20 it's ready to launch.
10:01:23 Q. I see.
10:01:26 So to put it in other words, would it be
10:01:30 fair to say that Aerospace Corporation is an

10:01:36 independent testing house, assurance type of entity?

10:01:42 A. Sure, with emphasis on the last word,

10:01:44 "assurance" rather than just "testing".

10:01:47 Q. Okay. Okay. And in terms of --

10:01:54 I just want to understand how this

10:01:55 works.

10:01:56 Does Aerospace Corporation contract with

10:02:01 suppliers through Department of Defense for particular

10:02:04 products and then assures them for compliance with

10:02:08 sort of requirements and then verifies that compliance

10:02:13 and delivers the product to Department of Defense?

10:02:18 How does that process work?

10:02:19 I may not be stating it --

10:02:21 I just want to understand what's

10:02:23 involved.

10:02:23 A. The major customers of Aerospace, when

10:02:28 they contract themselves for a launch vehicle,

10:02:35 satellite, some portion of a satellite in their

10:02:40 contract with a manufacturer such as Lockheed Martin

10:02:44 and NGST, they would have a clause saying that our

10:02:49 independent agents all have access to do their

10:02:53 appropriate assurance and verification task.

10:02:56 Q. I see.

10:02:59 So before Department of Defense accepts

10:03:02 a launch vehicle or a satellite or a subsystem of --

10:03:06 or some other component that it contracted directly
10:03:11 with Lockheed Martin or Boeing or some other
10:03:14 corporation, Aerospace Corp. employees would perform
10:03:23 assurance tests and other required -- contractually
10:03:27 required assurance programs on the particular product
10:03:33 in question before it's delivered to the Department of
10:03:37 Defense?
10:03:37 A. Yes.
10:03:37 Q. And once you've satisfied that the
10:03:42 product was -- complies with the contract, then you
10:03:49 would certify that product as in compliance, and the
10:03:54 Department of Defense would accept it?
10:03:56 A. That's basically it.
10:03:57 Q. Okay. Okay. And so as an employee of
10:04:05 Aerospace Corporation, have you designed any
10:04:10 multi-layer capacitors?
10:04:12 A. No.
10:04:12 Q. And have you ever designed multi-layer
10:04:19 capacitors?
10:04:25 A. I have been involved with the designing
10:04:30 of test samples of multi-layer capacitors.
10:04:37 I have also been involved with assuring
10:04:41 that the design of high reliability capacitors meets
10:04:47 the requirements of the particular specification they
10:04:50 were being procured for.

10:04:52 Q. So let me repeat the question.
10:04:56 Have you ever designed multi-layer
10:04:59 capacitors other than at Aerospace Corporation?
10:05:07 A. I don't understand the question.
10:05:13 Are you saying have I ever worked for an
10:05:15 outside company where I --
10:05:20 Q. Yeah, the company that designs
10:05:22 multi-layer capacitors.
10:05:23 A. No.
10:05:23 Q. Okay. That's fair.
10:05:32 And during that --
10:05:34 I'm sorry. I thought you --
10:05:36 A. Go right ahead.
10:05:37 Q. I thought I had -- I saw your hands
10:05:40 gesture. I wasn't sure if you needed something.
10:05:43 A. No, I was just adjusting. I've been
10:05:45 doing a lot of sitting over the last few days.
10:05:48 Q. I can imagine.
10:05:50 A lot of meetings?
10:05:51 A. (Witness nods).
10:05:52 Q. And in terms of that conversation that
10:06:02 you had with legal counsel yesterday at Holiday Inn,
10:06:08 were you shown any documents during that time?
10:06:11 A. Yes, I was.
10:06:12 Q. Do you remember which documents?

A. I remember there being, I believe it was, my declaration.

And I believe there was at least one of the documents I had mentioned previously filed on behalf of ATC, either June or July of this year.

Q. And to your recollection, you haven't reviewed any other documents during that meeting with counsel yesterday?

A. Not that were not listed in my declaration.

There may have been other documents listed in my declaration.

I do recall we talked about the patent, the 356 patent.

Q. Is that the patent you understand to be the patent in suit asserted against ATC?

A. Yes.

Q. But you had not reviewed that patent yesterday with counsel present.

Is that right?

A. We did read and talk about portions of it.

Q. Would you be able to --

If I showed you the patent, would you be able to tell me which portions you talked about with

10:07:30 counsel?

10:07:32 A. I could, looking at the patent, mention
10:07:38 that we had talked about some of the specific figures.
10:07:42 And I believe I would remember those figures.

10:07:46 I would not be able to point out any
10:07:49 specific paragraphs in the text of the patents that we
10:07:53 had talked about.

10:07:54 Q. Okay. That's fair.

10:07:54 (Whereupon Exhibit 3 was marked for
10:07:54 identification)

10:07:54 BY MR. SLONIM:

10:07:57 Q. Let me -- Let me put an Exhibit 3 in
10:08:12 front of you.

10:08:13 Here's a copy for counsel.

10:08:19 Would you please identify this document
10:08:21 for the record, after you have had time to look at it,
10:08:24 obviously?

10:08:25 A. Sure.

10:08:26 It is titled United States Patent No.
10:08:30 US 6,816,356 B2.

10:08:39 Q. And is that the 356 patent that you've
10:08:45 referred in your answers just before now?

10:08:48 A. Yes, it is.

10:08:49 Q. Thank you.

10:08:52 Would you please review the figures and

10:08:54 tell me which of the figures you've discussed with
10:08:58 counsel during your meeting yesterday?
10:09:04 A. There is one figure on the first page.
10:09:12 I don't see a figure number associated with that.
10:09:15 Q. Okay.
10:09:18 A. We had also talked about Figure 8A,
10:09:29 8A as in "alpha"; Figure 9A, as in "alpha".
10:09:43 Those are the only ones I recognize at
10:09:45 this point in time.
10:09:46 Q. Okay. Do you --
10:09:52 What did you discuss about Figure 8A, as
10:09:55 in "alpha" of the 356 patent with Counsel during your
10:10:00 meeting yesterday?
10:10:10 A. I picked this figure out as one in which
10:10:19 if those components shown within the figure were
10:10:24 formed into a single body, that I would consider
10:10:30 having a greater amount of internal defects such as
10:10:36 seams rather than is typical for a single monolithic
10:10:43 body.
10:10:44 Q. What was --
10:10:54 And what did Counsel tell you about that
10:10:57 figure?
10:11:02 A. I believe his only comment was that this
10:11:04 was prior art.
10:11:08 Q. And so in your opinion in this figure,

10:11:13 the capacitor, Figure 8A, as in "alpha", shows -- is
10:11:19 not a single body capacitor.
10:11:23 Is that right?
10:11:24 A. Correct.
10:11:24 Q. Would you please put -- Take a pen and
10:11:30 identify by, let's say, maybe a circle the different
10:11:35 bodies that you see.
10:11:37 And maybe put an identifier, let's say,
10:11:42 1 or 2 to identify -- 1, 2, or 3, or however many you
10:11:46 see there, so I can understand what you're talking
10:11:48 about and describe it verbally.
10:11:52 A. My interpretation of the figure, without
10:12:00 reading in some detail the discussion in the text
10:12:05 relating to it --
10:12:06 So my interpretation of it would show
10:12:08 that there are quite likely four distinct bodies
10:12:22 within it, which I have labeled in blue pen "1", "2",
10:12:27 "3", and "4".
10:12:28 Q. And how would you describe body Number 1
10:12:32 that you've labeled on Figure 8A of Exhibit 3?
10:12:38 A. This is a typical schematic of a
10:12:43 multi-layer dielectric body, in my opinion.
10:12:49 Q. And the parts you've labeled as 2, what
10:13:00 does that -- what kind of body is that?
10:13:02 What does that represent to you?

10:13:05 A. All I can tell from it is it appears to
10:13:08 be a distinct hard-edge body.
10:13:11 And I would say the same with bodies 3
10:13:14 and 4.
10:13:16 I cannot tell more about them. I see
10:13:20 nothing on those that indicate they're multi-layer.
10:13:24 Q. So the body on Body 1, is that a
10:13:33 dielectric body?
10:13:34 A. That's my interpretation of the figure,
10:13:37 yes.
10:13:37 Q. And would you also say that the element
10:13:42 that you've labeled 1, is that a complete capacitor,
10:13:47 or just the dielectric body?
10:13:56 A. Again, it would be my opinion, without
10:14:02 having the various elements explicitly identified,
10:14:08 that this would be a complete capacitor.
10:14:11 Q. And what is the difference between a
10:14:15 dielectric body of a capacitor and complete capacitor,
10:14:18 if any, in your expert opinion?
10:14:22 A. In my expert opinion, a multi-layer
10:14:28 dielectric body with internal conductive plates -- and
10:14:34 that's how I interpret these solid horizontal lines --
10:14:39 needs an external conductive connection to them.
10:14:45 And I appear to see on both the left and
10:14:47 right sides of what I have labeled Body 1, such

10:14:51 external conductive layers.
10:14:53 Q. And so is it your opinion --
10:14:58 Could you please label the external
10:14:59 conductive layers, let's say, whatever digit you want?
10:15:04 A. I have 1A and 1B, where A and B are
10:15:09 small subscripts.
10:15:10 Q. Can we just for clarity purposes relabel
10:15:15 them maybe with a number, maybe starting with 20 or
10:15:19 10?
10:15:19 A. Sure.
10:15:20 I will relabel 1A as 21, and 1B as 22.
10:15:27 Q. Okay. So -- And of these contacts, 21
10:15:38 and 22 --
10:15:40 At what time are they formed vis-a-vis
10:15:47 the dielectric body?
10:15:52 A. From my experience, they are always
10:15:56 formed after the dielectric body, itself, is formed.
10:16:03 Q. And what is the process for forming the
10:16:06 dielectric body called?
10:16:09 A. There are a number of processes that can
10:16:15 be used.
10:16:17 If the dielectric were a ceramic, then
10:16:22 the process of forming a body, a one-piece body from
10:16:29 those ceramic layers and the associated conductive
10:16:37 layers, would be called sintering, s-i-n-t-e-r-i-n-g.

10:16:45 Q. Are there any other processes that you
10:16:48 know about for making a dielectric body if a ceramic
10:16:54 is used other than sintering?
10:17:10 A. There are infrequently used processes,
10:17:20 such as epitaxial growth, and other deposition
10:17:28 processes.
10:17:30 Q. I would have to confess my ignorance.
10:17:33 I'm familiar with sintering, more or
10:17:36 less, as a result of this case.
10:17:38 Would you briefly describe the epitaxial
10:17:42 growth, if I'm pronouncing that correctly?
10:17:45 A. Epitaxial.
10:17:46 Q. Could you spell that for the court
10:17:47 reporter?
10:17:48 A. E-p-i-t-a-x-i-a-l growth.
10:17:54 And its equivalence involve a vacuum
10:18:03 deposition where on a substrate, you take the required
10:18:08 dielectric and you would, in effect, deposit it and
10:18:15 have it grow in a solid layer in that deposition
10:18:21 operation.
10:18:23 Q. So that's the --
10:18:25 Would I be correct to assume that it's
10:18:28 the internal growth of the lattice structure of the
10:18:32 ceramic that propagates through --
10:18:36 Is that part of that mechanism?

10:18:40 A. Yes, sir. Though, it would be on
10:18:42 external surface to some deposition beam.
10:18:47 Q. Okay. Okay. And other than those --
10:18:55 I guess you've mentioned sintering,
10:18:58 epitaxial growth, and deposition being a third
10:19:02 infrequently used method for making the dielectric
10:19:05 bodies that are ceramic?
10:19:07 A. Deposition is a class of processes of
10:19:12 which epitaxial growth is one example.
10:19:17 Q. Okay. What are the other examples of
10:19:19 deposition processes?
10:19:25 A. We are talking vacuum deposition
10:19:28 processes, meaning that they occur in a vacuum.
10:19:34 And besides direct vacuum deposit, which
10:19:42 is one and the most simple, there's epitaxial growth,
10:19:45 and there are a number of other processes I'd have to
10:19:49 refresh my memory on.
10:19:50 Q. Fair enough.
10:19:54 And let's say --
10:19:57 I think you've mentioned that if the
10:19:59 dielectric body is a ceramic or uses ceramic as part
10:20:03 of it, then the main method is sintering.
10:20:07 Am I correct to understand you that
10:20:12 dielectric bodies could be made with something other
10:20:14 than ceramics?

10:20:16 A. That is correct.
10:20:16 Q. And not all ceramics --
10:20:19 Not all dielectrics are ceramics?
10:20:23 A. That is correct.
10:20:23 Q. Could you give me a couple of examples
10:20:25 of materials that are dielectric but are not ceramic?
10:20:29 A. There are a whole class of polymeric
10:20:33 bodies involving everything from kapton to
10:20:41 polycarbonate, and a variety of other chemical
10:20:46 compositions.
10:20:48 Q. Is air considered a dielectric?
10:20:52 A. Yes.
10:20:53 Q. But it is not a ceramic?
10:20:55 A. Correct.
10:20:55 Q. Would paper be considered a dielectric?
10:20:59 A. Yes.
10:20:59 Q. It is not a ceramic, is it?
10:21:01 A. Correct.
10:21:01 Q. Is mica considered a dielectric?
10:21:07 A. Yes.
10:21:07 Q. Is it a ceramic?
10:21:14 A. Yes and no.
10:21:24 Q. And how do you define a dielectric?
10:21:29 What's a dielectric?
10:21:32 A. A dielectric material is one which has

some dielectric property of interest, whether it's scientific or commercial interest.

Q. And what are the dielectric properties that you know about?

A. The properties I'm most familiar with have to do with a particular dielectric constant --

Q. Okay.

A. -- and with a voltage breakdown strength.

Those are the more practical properties.

Q. Would it be fair to say that the purpose of dielectrics or the function of dielectrics is to prevent electrical conductivity?

Is that --

A. That's one of them, definitely.

Q. Okay. Are dielectrics also considered to be insulators?

A. Yes. They can be used in that purpose.

Q. Is there a difference between an insulator and a dielectric?

A. Dielectrics with -- while serving as insulators, are often used to store electrical charge. In deed, in a capacitor, that's perhaps their primary purpose.

Q. Could you give me an example of an

10:23:17 insulator that is not a dielectric?
10:23:25 A. I believe asbestos would fit that
10:23:29 description.
10:23:31 Q. Would it be fair --
10:23:40 Any other examples?
10:23:42 A. That's one that comes to mind.
10:23:46 Glass wool.
10:23:47 Q. Glass wool?
10:23:48 A. Wool, yes.
10:23:49 Q. W-o-o-l?
10:23:52 A. W-o-o-l.
10:23:57 Q. Would it be fair to say that an
10:24:00 insulator is a type of material that prevents
10:24:05 electrical conductivity but does not store a charge,
10:24:10 or --
10:24:10 Are those two properties always traveled
10:24:14 together, always a present or --
10:24:16 A. From a commercial point of view, a
10:24:24 dielectric is always an insulator on -- electric
10:24:31 insulator as opposed to a thermal insulator, two
10:24:37 classes.
10:24:37 But a dielectric is -- has the
10:24:42 commercially desirable property of having a high
10:24:46 charge storage density.
10:24:50 Q. Would it --

10:24:51 Could you give me an example of a thermal insulator that is not an electrical insulator?
10:25:00 A. Everything from a kitchen towel we might use to pick up a hot plate, a hot plate on a stove, or kitchen mitts.
10:25:12 Q. Could you give me an example of a thermal insulator that is also an electrical insulator?
10:25:32 A. I'd have to go back and consider that most electrical insulators have some thermal insulation properties, although they might not be very commercially usable.
10:25:48 Q. Okay. That's fair.
10:25:55 Is there a difference between a commercial point of view and a scientific point of view about differences between insulators and dielectrics, if any?
10:26:10 A. Yes.
10:26:10 Q. And what is that difference?
10:26:14 A. From a scientific point of view, to understand the mechanisms of thermal transfer or electrical transfer, something might be very desirable because it's simple and easy to evaluate.
10:26:32 But from a commercial point of view, it's just not practical to sell something with a

10:26:38 six-inch thick oven mitt.
10:26:41 Q. I see what you mean.
10:26:47 And in terms of your familiarity with
10:26:50 patents, are the patents concerned with the scientific
10:26:55 aspect of things or with commercial aspect of things?
10:26:59 A. As I understand it, with a commercial
10:27:01 aspect.
10:27:03 Q. And how did you form that understanding?
10:27:08 A. By having skimmed at least a number of
10:27:15 U.S. and foreign patents related to the multi-layer
10:27:20 capacitor and multi-layer polymeric capacitor
10:27:27 industry.
10:27:27 Q. When did you do that?
10:27:32 A. Over the last 35 years, off and on.
10:27:34 Q. And how many patents would you say you
10:27:40 have skimmed or reviewed?
10:27:45 A. 35 or 40 in some detail, and perhaps
10:27:49 several thousand as to just what the patent pertained
10:27:54 to.
10:27:55 Q. And what was the purpose of your review
10:27:58 of the 35 or 40 that you've reviewed in detail?
10:28:10 A. I have the impression -- it having been
10:28:15 a number of years since I've done this -- that this
10:28:18 was primarily to have me understand the variety of
10:28:25 materials and configurations that may have been

10:28:30 patented of particular groups of ceramics at different
10:28:36 times.
10:28:37 Q. I see.
10:28:41 And in terms of your review, did you
10:28:48 discuss your -- the results of your analysis and
10:28:54 review with somebody at the time when you were
10:28:57 reviewing these things?
10:28:59 A. Often, not.
10:29:01 Q. You would just --
10:29:03 You'd just do a review by yourself?
10:29:05 Is that --
10:29:06 A. Correct.
10:29:06 Q. And then if you think the material
10:29:09 you've reviewed in a patent was useful to you, you
10:29:12 would kind of enter that knowledge into your knowledge
10:29:16 bank and use it if necessary or not?
10:29:19 Is that basically the --
10:29:21 Was that the purpose, just to inform you
10:29:23 about new developments in the field?
10:29:26 Is that --
10:29:27 MR. SCHATZ: Objection. Vague and compound
10:29:29 question.
10:29:29 BY MR. SLONIM:
10:29:29 Q. You may answer.
10:29:34 A. My recollection of my reviews over the

10:29:41 past 30 years were that they were primarily to inform
10:29:44 me of developments in the industry.
10:29:48 Q. And is there a particular company that
10:29:52 you remember that you were reviewing patents more
10:29:55 often than not, that they were owned by a particular
10:30:01 company?
10:30:02 A. No, that was often the discriminator for
10:30:07 me, was U.S. versus Japanese versus European
10:30:13 companies.
10:30:17 Q. I see.
10:30:18 How did you discriminate between U.S.
10:30:21 versus Japanese versus European?
10:30:21 What was the --
10:30:24 A. My knowledge of the particular
10:30:27 manufacturer who was at least shown on the patent, and
10:30:35 where that manufacturer had most of their R & D
10:30:39 facilities located.
10:30:42 Q. Are you mostly familiar with the U.S.
10:30:48 based manufacturers of multi-layer capacitors?
10:30:56 A. Mostly.
10:30:58 Q. And would it be fair to say that you
10:31:01 were reviewing the patents more of the Japanese and
10:31:04 European ones that you were less familiar with?
10:31:08 A. That is fair.
10:31:10 Q. Was there any other way you were

10:31:12 discriminating between them or choosing one as opposed
10:31:15 to another for any other purpose?
10:31:19 A. More by the specific dielectric material
10:31:24 being used and discussed in the patent.
10:31:28 Q. And did you follow up --
10:31:32 After reviewing a particular patent of
10:31:35 interest, did you follow up with a review of a
10:31:39 nonpatent technical literature about the same material
10:31:43 or same subject?
10:31:45 A. Some of the time.
10:31:47 Q. Okay. In coming back I think to
10:32:01 Figure 8A here, I -- I believe you said --
10:32:10 MR. SCHATZ: I'm sorry, Mr. Slonim.
10:32:12 I think you've been going for about an
10:32:15 hour now. It looks like you've just got done with
10:32:18 kind of a line of questioning.
10:32:19 Would now be a good time for just a
10:32:24 five-minute break?
10:32:24 MR. SLONIM: Not until you learn how to
10:32:26 pronounce my name.
10:32:27 MR. SCHATZ: I apologize.
10:32:28 Is it "Slonim"?
10:32:29 MR. SLONIM: Yes.
10:32:29 MR. SCHATZ: I thought that's what I said.
10:32:29 MR. SLONIM: I think you said "Slomin".

10:32:29 MR. SCHATZ: I apologize if I did. I don't think I did.

10:32:33 But, Mr. Slonim, could we take a five-minute break if you're done with a line of questioning?

10:32:38 MR. SLONIM: Absolutely, yes.

10:32:40 MR. SCHATZ: Very good.

10:32:42 THE VIDEOGRAPHER: Going off the record.

10:32:43 The time is 10:32 hours.

10:32:47 (Whereupon a recess was taken)

10:47:36 THE VIDEOGRAPHER: Back on the record.

10:47:41 The time is 10:47 hours.

10:47:43 BY MR. SLONIM:

10:47:47 Q. In coming back to the topic we've been talking about before the break, I believe you said that when a dielectric body is ceramic, the process of making it, the primary process of it, is sintering.

10:48:06 What if a dielectric body is not a ceramic?

10:48:10 What is the primary process for making those types of multi-layer capacitors?

10:48:19 A. You can use the dielectric polymer, itself, heat that up, and gently press it. And it oftentimes has enough adhesion between different layers of tape in order to stick together well enough.

10:48:45 Sometimes additional material would be applied to make that stickiness greater.
10:48:54 Q. I see.
10:48:55 Like a dopant?
10:48:58 A. No.
10:48:58 Like you put an extra layer in between whose dielectric properties were not as good as the first, but it formed a better glue.
10:49:10 Q. I see. I see.
10:49:12 So you would enlarge the thickness of the dielectric layer with a different type of dielectric with different properties to make the entire capacitor work better?
10:49:22 A. From a structural point of view.
10:49:24 Q. And how is that process called?
10:49:31 A. The process whereby the polymer layers form an integral body is usually called curing, c-u-r-i-n-g.
10:49:49 Q. Is curing the same as sintering?
10:49:56 A. No. Sintering is done with ceramic powders and at quite high temperatures, often on the order of 1,000 degrees C.
10:50:11 You can cure a polymer at room temperature or slightly above.
10:50:23 Q. I think I've heard of another method in

10:50:33 connection with making the multi-layer capaci -- the
10:50:36 dielectric capacitors called fusion or fusing.
10:50:42 Is fusing one --
10:50:44 Is that a part of sintering or of
10:50:50 curing?
10:50:51 A. I can guess on this particular
10:50:55 application that --
10:50:56 MR. SCHATZ: I'll just counsel the witness.
10:50:58 Don't speculate or guess.
10:51:00 THE WITNESS: Okay.
10:51:04 I would have to simply guess as to how
10:51:06 the term might be used in this context.
10:51:08 BY MR. SLONIM:
10:51:12 Q. In your expert opinion, have you ever
10:51:16 made a capacitor by fusing?
10:51:19 A. No.
10:51:20 Q. So it's not part of your expert
10:51:23 knowledge about the fusing process for making
10:51:27 multi-layer capacitors?
10:51:33 A. I am familiar with that term being used
10:51:36 to describe the joining of the metal particles in the
10:51:43 conductive layers within a capacitor, just the
10:51:50 conductive layers.
10:51:52 Q. Could you describe what your
10:51:55 understanding is about joining the conductive layers

10:51:59 by fusing?

10:52:00 Would that be the correct term, or --

10:52:03 A. The process whereby the conductive
10:52:08 layers form is primarily to take metal powder as
10:52:17 opposed to ceramic powder within the dielectric
10:52:22 layers, to take that metal powder and to heat it
10:52:26 enough that the particles join, or it could be called
10:52:31 partially fused together.

10:52:32 Q. And the partially fused together would
10:52:38 be only the conductive layers?

10:52:40 A. Yes.

10:52:40 Q. And then once the partially fused
10:52:43 together conductive layer is formed --

10:52:46 And I guess it's formed separately from
10:52:49 the dielectric layer.

10:52:51 Is that correct?

10:52:52 A. It would be formed in the same operation
10:52:58 of heating that you form the dielectric layers by
10:53:04 sintering.

10:53:05 Q. So let me understand.

10:53:11 Let's say you start with a dielectric
10:53:12 layer. It's layer one. You form it by sintering.

10:53:17 Is that --

10:53:18 Or basically, you deposit dielectric
10:53:21 powder on some stand or on some --

10:53:27 You just form one dielectric layer on a
10:53:30 support.
10:53:30 Correct?
10:53:31 MR. SCHATZ: Objection. Compound question.
10:53:31 BY MR. SLONIM:
10:53:32 Q. Is that how you understand that's done?
10:53:36 MR. SCHATZ: Objection again. Compound.
10:53:38 What are you asking whether he
10:53:43 understands?
10:53:43 BY MR. SLONIM:
10:53:43 Q. I just want to understand how the metal
10:53:47 layers are formed by fusing simultaneously with the
10:53:51 dielectric layers being formed by sintering, how these
10:53:56 processes relate to one another I guess in time and
10:54:01 space.
10:54:02 MR. SCHATZ: Objection.
10:54:03 BY MR. SLONIM:
10:54:03 Q. If you could just explain that.
10:54:05 MR. SCHATZ: Objection. Vague. And multiple
10:54:08 questions asked at the same time.
10:54:08 BY MR. SLONIM:
10:54:11 Q. You may answer.
10:54:21 A. If we are talking about a multi-layer
10:54:29 ceramic capacitor, the layers are formed by most
10:54:40 companies by making a tape which has both organic

10:54:51 material in it as a carrier and ceramic powder. So
10:54:59 that tape is formed and laid down.
10:55:04 So if we consider this piece of paper to
10:55:09 be a single dielectric tape, then in a manner by which
10:55:20 T-shirts -- a manner analogous to which T-shirts are
10:55:25 screen printed with a design, I would screen print on
10:55:32 electrode layer -- electrode is the technical term for
10:55:36 internally conductive layer -- on top.
10:55:40 And this electrode layer would have very
10:55:45 fine metal powders, one or more, again within a
10:55:50 polymeric binder, is the technical term, for carrier.
10:55:57 I would repeat this to form however many
10:56:02 multi layers I wanted.
10:56:05 I may have -- I would then often package
10:56:09 this within just a pure layer of tape on the top and
10:56:15 the bottom.
10:56:17 And I would put this within an oven, and
10:56:23 I would slowly heat up the oven.
10:56:32 At some point, it would be the oven's
10:56:35 internal temperatures would be hot enough that at the
10:56:40 same time, the metal powders within would flow
10:56:45 together and contact each other to form a continuous
10:56:49 layer, and the dielectric powders would sinter
10:56:53 together to form a structurally integral block or
10:57:03 chip.

10:57:04 Q. I see, I see. And so the process when
10:57:06 you heat that in a green state, you heat tape with the
10:57:12 electric layers with electrical conductor layers, the
10:57:16 metal layers, the metal layers within that -- when the
10:57:20 metal powders join together to form that conductive
10:57:23 layer, that is called fusing.
10:57:23 Right?
10:57:27 Is that --
10:57:28 A. You could use that terminology. It's
10:57:30 not the most common terminology.
10:57:33 But it's my opinion that best fits your
10:57:38 use of the word "fusing".
10:57:39 Q. But otherwise, the more common
10:57:45 terminologies in the field would be to call that
10:57:48 entire process, forming dielectric layers and metal
10:57:53 layers and sticking it in an oven, sintering?
10:57:58 A. Sintering, or just plain firing,
10:58:04 f-i-r-i-n-g.
10:58:05 Q. Okay. Okay. And as a result of
10:58:16 sintering, you would get however many layers of
10:58:20 dielectric and conductive materials you had, you would
10:58:24 get a single chip capacitor.
10:58:28 Is that your understanding?
10:58:35 A. That we have some --
10:58:37 If that were our design, as in Figure 9A

10:58:45 of the patent we are describing here, US 6,816,356 B2,
10:58:52 you would get what looks like a single block or chip
10:58:58 from the outside, yes.
10:59:00 Q. What is the difference between I guess a
10:59:09 single chip and a single block, if any?
10:59:17 A. Those terms are often -- are usually
10:59:20 used synonymously.
10:59:22 Q. So there is no difference between them?
10:59:26 A. Correct.
10:59:26 Q. And so in Figure 8A -- or 9A --
10:59:38 A. Let me --
10:59:39 On my last comment upon a chip would be
10:59:45 considered to have six sides, in a gross sense. You
10:59:55 know, there may be minor imperfections that give it
10:59:59 more than six sides.
11:00:01 A block is a more generic term which
11:00:04 could be -- which could have a different amount of
11:00:09 sides.
11:00:11 Q. And so the word "brick" does not define
11:00:20 a shape.
11:00:21 Is that another way to say that?
11:00:24 MR. SCHATZ: You used a different term. Now
11:00:26 you're using brick", not "block".
11:00:29 MR. SLONIM: Block. I apologize.
11:00:31 MR. SCHATZ: I just want to make sure your --

11:00:32 what your question is.
11:00:32 BY MR. SLONIM:
11:00:34 Q. Well, let me restate the question so
11:00:37 we're clear on the record.
11:00:38 And so the word "block" does not define
11:00:44 the number of sides.
11:00:47 Is that correct?
11:00:49 A. That's my opinion as to how one of
11:00:53 ordinary skill in the art would interpret the word.
11:00:56 Q. And so a block can have any number of
11:01:02 sides?
11:01:06 A. That's -- A block can -- is more likely
11:01:09 to have a small number of sides rather than any number
11:01:14 of sides. But it's -- it's indeterminate of the exact
11:01:18 number of sides.
11:01:19 Q. Okay. Okay. And if we look at
11:01:33 Figure 8A and the capacitor that I think you've
11:01:39 circled as 1, would that also be an example of a
11:01:46 single chip capacitor that you've testified previously
11:01:51 about?
11:01:55 A. Figure 8A is what I call a schematic
11:02:00 drawing, a representative drawing.
11:02:03 Q. Uh-huh.
11:02:04 A. My interpretation, if the symbols in
11:02:09 this schematic drawing are typical of those I've seen

11:02:13 that --

11:02:14 What I have circled here as Figure 1
11:02:17 would represent a chip, plus some additional external
11:02:24 layers.

11:02:25 Q. So does single chip --

11:02:40 So what does "single chip", then, refer
11:02:43 to in the element you circled as 1 of Figure 8A?

11:02:52 Does that --

11:02:53 You can answer.

11:02:59 A. The chip can be used, depending upon the
11:03:04 context, as the sintered dielectric body alone, or
11:03:12 with its externally conductive layers that I have
11:03:18 labeled 21 and 22.

11:03:22 But there also appears to be additional
11:03:28 interconnecting layers here that I have not labeled
11:03:32 that would not usually be considered as part of a
11:03:34 chip.

11:03:36 Q. And what are the layers that you have --
11:03:39 that you're --

11:03:50 Let me withdraw that question, and let
11:03:52 me ask a cleaner one.

11:03:54 So the element you've labeled as one in
11:03:59 Figure 8A and capacitor represented by Figure 9A, you
11:04:06 would call both of them a single chip capacitor?

11:04:11 MR. SCHATZ: I'm just going to object.

11:04:13 Are you referring to strictly the
11:04:14 schematic, or a product manufactured pursuant to those
11:04:22 figures?
11:04:23 The question is vague.
11:04:23 BY MR. SLONIM:
11:04:24 Q. You may answer if you understand the
11:04:26 question.
11:04:38 A. My reading and understanding of the
11:04:44 patent, the 356 patent, and its description of
11:04:51 Figure 9A allows in my opinion two different
11:05:05 interpretations based upon the context.
11:05:09 If the same dielectric and conductive
11:05:17 materials were used throughout its construction, and
11:05:22 it was formed in one single sintering or firing
11:05:28 operation, then I would see that as a single chip or
11:05:37 brick.
11:05:38 Q. And by two interpretations, what -- the
11:05:51 one that you just gave me, is that one of the
11:05:54 interpretations?
11:05:55 A. Yes, it is.
11:05:55 Q. What is the second one?
11:06:02 A. Upon my reading of the patent as a
11:06:09 technical, not a legal person, I see that the patent
11:06:17 covers the use of more than one dielectric formulation
11:06:28 in the same product, the same external item that would

be sold to a user.

I could see whereby one might design, and therefore manufacture what we see in 9A in one or more steps. In which case, looking at it from the outside is a finished product, I could not tell whether this were fired sintered in one step such that I had a single chip or whether it was fired in one or more steps, whereby there were interim products of one or more chips which then in a subsequent operation were then joined together to be what I'd see at the end.

Q. So let me clarify, give you an example just to understand your answer.

So let's say Figure -- A capacitor represented by the schematic in Figure 9A has been formed in one -- as one sintering process.

All the dielectric layers, all the internal electrical conductors, all formed in one step, sintered, you would call that a single chip.

And let's say we've made -- at the same time, we've made ten of these capacitors of Figure 9A, and each of them have been sintered in one step.

So I take two of those capacitors, each of which has been sintered once. And I stack them one upon another.

11:08:42 Are you saying that then you can put
11:08:45 that combination of two capacitors back into the oven
11:08:49 to resinter them into a single -- into something you
11:08:54 would call a single chip?
11:09:04 A. That wasn't what I meant to convey in my
11:09:15 description of an alternate configuration.
11:09:19 But said operation is possible, and is
11:09:28 in deed done commercially.
11:09:33 Q. And who are you aware of is doing that
11:09:44 commercially?
11:09:46 A. That second operation.
11:09:47 Q. And by "second operation", let's be
11:09:51 clear about what we're talking about since there may
11:09:55 be a misunderstanding.
11:09:57 I've sintered in one step a capacitor
11:10:00 represented in Figure 9A.
11:10:02 A. Right.
11:10:02 Q. And I've also sintered another capacitor
11:10:06 just like Figure 9A. I have two of them separately
11:10:12 sintered, each in one single step.
11:10:12 And then I put them one on top of
11:10:14 another, maybe with something to hold them together so
11:10:18 they're not blown in the wind.
11:10:20 And then I can put that combination back
11:10:23 into the oven to resinter the already sintered blocks,

11:10:29 the already sintered single chips.
11:10:31 Is that what you're saying is being done
11:10:35 commercially?
11:10:35 A. No.
11:10:36 Q. Well, then could you explain what you
11:10:41 said the commercial -- commercially is being done in
11:10:46 that sense?
11:10:48 A. There are commercial products being sold
11:10:54 by suppliers such as AVX and Presidio, and they're
11:10:59 called stacked, s-t-a-c-k-e-d, capacitors, whereby
11:11:08 individual chips or bricks which are each formed in a
11:11:16 single or two-stage operation are joined together to
11:11:27 make one piece.
11:11:30 But they are not joined in a sintering
11:11:33 operation. They are joined in a much lower
11:11:36 temperature operation. And perhaps held together just
11:11:39 by solder.
11:11:43 So they would be heated to the
11:11:44 temperature whereby the solder in between them melts
11:11:49 and flows, so they're held together by solder with or
11:11:53 without a metal frame to hold them in position.
11:11:58 And those are called stacked capacitors.
11:12:03 Q. Any other examples of capacitors that
11:12:14 would be held -- would be combined from two or more
11:12:19 single chips that were already sintered by themselves

11:12:23 in one sintering step other than stacked capacitors?
11:12:27 Any other examples that you know of?
11:12:29 A. May I sub --
11:12:33 Q. You may.
11:12:35 A. Figure --
11:12:36 Q. Absolutely.
11:12:37 A. Okay. I'm taking Figure 9 --
11:12:42 Q. 9A.
11:12:42 A. 9A. Thank you.
11:12:45 -- and I am forming two units out of it,
11:12:53 which I will call 11 and 12.
11:13:07 Q. Dr. Ewell, before we move any further,
11:13:09 to avoid confusion, I believe there are -- there is an
11:13:15 Element 12 in that figure. And I think 11 is also
11:13:19 being used.
11:13:19 Can we relabel them 98, 99 --
11:13:24 A. How about 31 and 32?
11:13:28 Is that -- Oh.
11:13:30 111, 112?
11:13:36 What numbering would --
11:13:38 Q. Let's do --
11:13:40 I just want to avoid confusion so I'm
11:13:43 not --
11:13:43 A. I appreciate that.
11:13:46 Q. Can we use maybe letters?

11:13:48 Let's say A and B?
11:13:50 A. Let's use letters capital A and capital
11:13:54 B.
11:13:54 Q. Okay. So these would be called Sections
11:13:57 or Part A, Part B?
11:14:00 Is that --
11:14:00 A. Sure.
11:14:00 Q. Okay. With that relabeling, could you
11:14:03 proceed with your answer, please?
11:14:05 A. I could -- My reading and interpretation
11:14:11 of this, the 356 patent, and its discussion of forming
11:14:19 a product, having more than one dielectric layer in
11:14:26 the same product leads me to conceive of a product
11:14:34 having two portions in its simplest configuration
11:14:40 here, A and B, whereas A would have one dielectric
11:14:49 material --
11:14:50 Q. Okay.
11:14:51 A. -- and possibly one electrically
11:14:54 conductive metal powder there. And being sintered at
11:15:00 one temperature optimum for that combination.
11:15:06 Q. Okay.
11:15:07 A. And Section B of the same capacitor,
11:15:12 having a different dielectric material, perhaps a
11:15:16 different conductive metal --
11:15:20 Q. I see.

11:15:20 A. -- and being sintered or fired at a
11:15:23 different temperature which was optimum for that
11:15:26 second combination.
11:15:27 Q. Okay.
11:15:28 A. Then I could see those two being
11:15:34 sintered together to form a single larger block or
11:15:42 array, perhaps. Let's call it an array.
11:15:48 And this third sintering operation would
11:15:50 be at a lower temperature whereby we're concerned just
11:15:54 about mechanical integrity and not about developing
11:15:59 the dielectric properties of each.
11:16:06 Q. I see.
11:16:07 And that lower temperature would be
11:16:09 lower than the sintering temperature of Block A and
11:16:13 Block B?
11:16:14 A. Of Block A or Block B, yes.
11:16:18 Q. So it could be one, but not both.
11:16:18 Right?
11:16:26 Either of one, but not of both?
11:16:28 A. I would conceive it being at a lower
11:16:31 temperature than either.
11:16:33 Q. Okay. And then the result of that third
11:16:45 sintering stack of sintering Part A to Part B, you
11:16:53 would call that also a single chip capacitor?
11:17:02 A. It would look to one observing it on the

11:17:09 outside as a single intact piece. However, it
11:17:18 cross-sectioned, such as shown here schematically,
11:17:20 would show it to have been formed of more than one
11:17:23 individual chip or block or brick, perhaps a chip or
11:17:30 brick.
11:17:30 And therefore, it would be a more
11:17:33 accurately described as on array or assemblage of
11:17:40 chips.
11:17:41 Q. I see. I see.
11:17:42 And in terms of when you say you would
11:17:44 be able to see that it's formed out of two separate
11:17:49 parts, A and B, when you observe -- when you look at
11:17:57 that in cross section, what would tell you that they
11:18:00 have been formed separately?
11:18:04 How would you be able to determine that
11:18:06 they were formed separate?
11:18:07 How would that be reflected on a cross
11:18:10 section?
11:18:12 A. It would be primarily induced by doing
11:18:21 microchemical analysis, compare between the two
11:18:27 sections, A and B, and seeing in deed that the
11:18:32 chemistries of the dielectric vary and of the
11:18:36 electrical materials vary.
11:18:40 And therefore, I would conjecture that
11:18:44 in order to properly mature one compared to the other,

11:18:48 they had been fired in different temperatures.
11:18:53 Q. I understand.
11:18:55 Would there be some kind of a seam or
11:19:02 joint between them when they are joined together that
11:19:07 would also lead you to believe or at least initially
11:19:10 hypothesize that you may need to do --
11:19:14 A. Yes.
11:19:14 Q. -- a chemical analysis just to confirm
11:19:18 your initial guess, that because of that seam or some
11:19:22 other --
11:19:24 A. The seam would lead me to look further
11:19:28 onto what had caused the seam.
11:19:31 Q. I see.
11:19:33 A. And one of the reasons could be it would
11:19:36 be rather rare to this date to have that happen. But
11:19:41 it could happen.
11:19:42 Q. Okay. And if you look at Figure 9A, I
11:19:49 believe there is a line between Section A and
11:19:55 Section B.
11:20:01 A. Right.
11:20:01 In my figure on the right-hand side,
11:20:04 there's something where the external Number 60 and
11:20:07 62 --
11:20:09 Q. Correct?
11:20:10 A. -- come together.

11:20:10 Q. Could you label that line that separates
11:20:14 60 and 62 maybe with a letter?
11:20:18 Let's say "zz" as in zebra.
11:20:22 A. Yeah, my drawing here overlaps that a
11:20:26 bit.
11:20:27 Q. Perhaps we can --
11:20:28 A. I can certainly do that --
11:20:40 "Z"?
11:20:41 Q. Yes.
11:20:41 But you are able to see the line drawn
11:20:43 on the schematic representation before I overwrote it
11:20:53 with my --
11:20:53 A. On Figure 9A, yes.
11:20:56 Q. And referring to that line that
11:20:59 separates Section -- you labeled and A and Section B,
11:21:04 that would be where the seam would be that we were
11:21:08 talking about between two different parts?
11:21:10 Is that --
11:21:10 A. That would be where a more distinct seam
11:21:15 than typical would show up.
11:21:20 Q. What would make that seam more distinct?
11:21:34 A. In my hypothetical discussion of how
11:21:39 this figure -- how a product representing Figure 9A
11:21:46 were formed, it would show up by the fact that I had
11:21:50 two chips or bricks which I were pressing together

11:21:54 along a line in between.
11:21:58 And even with my best strength at pressing them together, there would be more small voids and gaps than typical of pressing together green unfired tape.
11:22:14 Q. I see. I see.
11:22:20 And how many more voids and gaps would you expect to see I guess between two already sintered -- separately sintered blocks when you press them one upon another?
11:22:34 Is there any number that is indicative --
11:22:40 A. No.
11:22:41 Q. -- of that?
11:22:43 A. There's a certain random nature, depending upon the different roughnesses of the two chips or blocks, and where they were positioned with respect to each other.
11:22:56 Q. Would it be fair to say that these voids and gaps are -- are also a product of how the chips were aligned and how much they were pressed together?
11:23:13 A. Yes.
11:23:13 Q. So it's not only the -- their chemical structure that would result in these voids and gaps.
11:23:22 Is that a fair statement?

11:23:24 When the two sintered blocks are pressed together, it's not only their own chemical structure. It's also all the forces outside and how they're aligned and pressed.

11:23:36 Is that a fair statement?

11:23:38 A. Correct.

11:23:38 Q. And so would it be fair to say that a certain person could press two parts, A and B, against each other differently?

11:23:56 A. Where A and B are --

11:23:57 Q. Let's say A and B are identical. You make A and B separate --

11:24:02 A. Identical bricks or chips which are multi-layer capacitors?

11:24:10 Give me your context, please.

11:24:11 Q. Yes, absolutely.

11:24:12 Let's say you make 20 Parts A that you've labeled. They are sintered. They form a single chip, I think you said.

11:24:22 So it's 20 of them in one -- I guess you cut them from a tape. So you'll make 20.

11:24:30 And then you make separately at a different temperature, a different chemical composition of dielectric and metal. You make 20 Parts B.

11:24:39 And let's say then you take a combination, and let's say these Parts A and B, you take the first combination.
11:24:55 A. First set of A and B.
11:24:57 Q. First set of A and B.
11:24:59 A. Okay.
11:24:59 Q. And then you take a second set of A and B, and then you take a third set of A and B, and you press them at different times maybe at different pressures.
11:25:08 Would it be possible that the results of those three sets of pressing sets A and B together would be different in terms of voids and gaps formed there?
11:25:23 A. Yes, it would be possible for them to be different.
11:25:30 Q. Different in amount of voids and gaps?
11:25:34 A. Different in amount.
11:25:38 Q. And different in configuration of voids and gaps?
11:25:45 MR. SCHATZ: Objection. Vague.
11:25:45 BY MR. SLONIM:
11:25:47 Q. If you understand that term.
11:25:49 A. I don't understand it in this context.
11:25:52 Q. How would you be able to count voids and

11:25:57 gaps?

11:25:59 What would you need to do to do that?

11:26:09 A. In a practical sense, if I were at a
11:26:12 ceramic capacitor manufacturer with ordinary skill in
11:26:19 the art, the way I would do this would be to take a
11:26:24 product such as that represented schematically in 9A,
11:26:28 and I would fracture or break it in a way that I'd get
11:26:37 a cross section represented by this schematic.

11:26:44 I would then put it -- examine that
11:26:49 cross section under a scanning electron microscope.

11:26:56 Q. Okay.

11:26:57 A. And there are programs, automatic
11:27:02 programs, meaning that there's software and
11:27:08 appropriate equipment associated with that scanning
11:27:13 electron microscope that we'll abbreviate it by the
11:27:17 initials SEM in capitals, which would allow me to
11:27:26 determine the size and the spacing of any voids or
11:27:33 gaps along that seam as well as other seams.

11:27:40 Q. And how do you understand that
11:27:44 microscope and software do that?

11:27:50 A. It's -- My understanding is that it
11:27:53 rasters, is the technical term, r-a-s-t-e-r-s, a beam
11:28:00 spot back and forth across the surface of whatever
11:28:06 sample I've got, that it identifies the location of
11:28:12 that raster point.

11:28:13 And by the contrast, it can tell whether
11:28:18 it's on a ceramic or other dielectric surface when
11:28:25 it's on a metal or conductive plate surface, and when
11:28:29 it's in what looks like to be an air gap.
11:28:34 And so it can identify the shape, the
11:28:42 dimensions, and the location of those air gaps when
11:28:46 they occur.
11:28:50 Q. And then as a result of that scanning
11:28:53 electron microscope and software working on a cross
11:28:58 section of that capacitor, you would get a visual
11:29:02 picture with representations of the voids and gaps on
11:29:08 that picture exactly as they appear in the cross
11:29:11 section to scale or to some --
11:29:13 Is that --
11:29:15 A. You can do that. More often, you get a
11:29:22 numerical plot of -- it's -- it would be an XY plot
11:29:31 showing whereby in an equivalent schematic, the
11:29:34 density of -- and size of various voids and gaps.
11:29:40 Q. And that's a plot in terms of various
11:29:45 size of voids and gaps.
11:29:47 So what would be on the "x" axis of that
11:29:50 plot?
11:29:54 A. You know what? I'm trying to remember
11:29:55 now what I've seen before.
11:30:00 My recollection is that you would get

11:30:00 by --
11:30:09 One dimension, for instance, would be
11:30:13 with reference to Figure 9A, would be the vertical
11:30:23 distance. One axis would be the horizontal distance
11:30:28 here, say, measured from the lower-left corner of
11:30:31 Figure 9A.
11:30:35 And it would give you some plotting of
11:30:42 both the -- of the distribution and the location of
11:30:49 size and density of voids or gaps across that cross
11:31:00 section.
11:31:02 Q. How many --
11:31:04 Would that be a curve shown on that
11:31:09 graph, on that plot?
11:31:11 A. You could ask it to do that.
11:31:13 It might be a two-dimensional array.
11:31:18 But the data can be presented in a variety of ways.
11:31:23 Q. And what's the most typical that you
11:31:27 have seen?
11:31:30 A. Where I am doing on analysis, say, for
11:31:40 adequacy of the sintering, I would be interested in
11:31:45 those seams such as zz and the other seams above and
11:31:54 below that.
11:31:56 And I would ask it to simply give me a
11:31:59 representation just along the seams so that I could
11:32:05 see whether seam zz was typical of the other seams in

11:32:11 terms of the size and number of voids.

11:32:16 And then I would, by having some

11:32:18 standard, some parts I had looked at previously and

11:32:21 known to be good, structurally integral enough to

11:32:27 produce a usable capacitor, I would also, say, do the

11:32:33 voids, the number and density along any of the seams,

11:32:36 are they out of family.

11:32:40 With that, I've seen for good enough or

11:32:44 sufficiently good seams in the past.

11:32:48 Q. So would it be fair to say you would

11:32:51 need a point of reference for your comparison?

11:32:54 A. Yes.

11:32:55 Q. And otherwise, the --

11:32:57 If you don't have a point of reference,

11:32:59 the absolute number of voids and gaps and their

11:33:03 density or distribution would not be a meaningful

11:33:07 parameter, just standing alone?

11:33:10 Let's say you're doing the first sample.

11:33:13 You don't have a reference point. You

11:33:15 measure it. There's 100 voids, and they are on some,

11:33:22 let's say, 1 mil or less than 1 mil each.

11:33:27 What would that tell you?

11:33:28 Would that absolute number be meaningful

11:33:30 without a reference point?

11:33:31 MR. SCHATZ: I'm just going to object as it's

11:33:34 vague.

11:33:34 Is that in the context of someone of
11:33:36 ordinary skill in the art, or not?

11:33:39 MR. SLONIM: Absolutely.

11:33:41 Q. In your expert opinion in this art.

11:33:44 A. In this case, if I were interested in
11:33:48 whether the seam I have marked as zz in Figure 9A were
11:33:55 typical of other seams, it would be meaningful because
11:33:59 I'd look for relative differences.

11:34:02 Q. Okay. Are there any other purposes for
11:34:08 which you could examine the seam zz other than its
11:34:13 typicality?

11:34:21 A. I would also look at that seam in order
11:34:26 to make a expert opinion as one of ordinary skill in
11:34:34 the art, that there had been sufficient sintering or
11:34:39 bonding across the zz gap, that the chip was in deed
11:34:45 structurally integral and likely to survive the
11:34:49 manufacturing and usage application.

11:35:00 Q. And what number of voids or what other
11:35:10 characteristics of voids would be indicative of that
11:35:15 chip being structurally integral and likely to survive
11:35:21 the manufacturing and usage application?

11:35:27 A. I have examined enough product over
11:35:34 30 years as to be able to form a distinct impression
11:35:39 of what's typical of sufficiently good to survive.

11:35:47 And I could look at seam zz, and if it
11:35:49 were in the terminology we use in the trade, if it
11:35:55 were quote/unquote out of family, meaning that if it
11:36:00 were sufficiently different than what I typically saw,
11:36:04 I would identify that as something requiring more
11:36:07 investigation.
11:36:09 Q. And how do you define this family?
11:36:17 A. That relates to --
11:36:24 In this case, we're relating to a visual
11:36:27 impression. And that comes from having seen a great
11:36:31 many.
11:36:33 It could also be implied with respect to
11:36:37 electrical characteristics, such as insertion loss.
11:36:43 Q. So you would supplement your visual
11:36:47 inspection of a cross section with electrical testing
11:36:52 of the capacitor, and then examine that data together.
11:36:58 Is that -- Is that what you're telling
11:37:01 me?
11:37:02 A. Right.
11:37:02 Is that in order for this chip or brick
11:37:07 or product to be usable, it's got to both be usable as
11:37:13 an electrical device, a capacitor, and it's got to
11:37:17 have enough structural integrity to survive the
11:37:22 manufacturing processes.
11:37:24 Q. And when you say it has to be usable as

11:37:29 a capacitor, what do you mean?

11:37:32 A. That it must have the desired electrical properties, which includes dielectric properties, and must be able to retain those properties over the life of its use.

11:37:53 Q. And how do you define the life of its use?

11:38:02 A. That would vary from user to user.

11:38:09 Q. Would you say it's a subjective term?

11:38:12 A. No.

11:38:14 If I were manufacturing iPods, I could estimate the use might -- or cell phones -- the use might be two years.

11:38:30 If I were manufacturing heart implants, I might want its useful life to be 15 or 20 years.

11:38:39 Q. I hope more. I would not like to --

11:38:46 A. Even those get upgraded or replaced, periodically.

11:38:50 Q. Oh.

11:38:51 A. Especially if they have internal batteries associated with them.

11:38:56 Q. I see.

11:38:59 A. Excuse me a moment.

11:39:02 MR. SLONIM: Maybe now is a good time to end this tape and take another break.

11:39:06 MR. SCHATZ: Great.

11:39:07 THE VIDEOGRAPHER: This marks the end of tape
11:39:09 Number 1 in the deposition of Gary Ewell.

11:39:11 Going off the record.

11:39:12 The time is 11:38 hours.

11:39:17 (Whereupon a recess was taken)

11:54:50 THE VIDEOGRAPHER: Back on the record.

11:54:55 Here marks the beginning of tape
11:54:57 Number 2 in the deposition of Gary Ewell.

11:54:59 The time is 11:54 hours.

11:55:02 BY MR. SLONIM:

11:55:03 Q. Dr. Ewell, before the break, we were
11:55:09 talking about visual inspections of cross sections of
11:55:12 capacitors for voids and gaps and seams.

11:55:16 I wanted to continue that line and ask
11:55:16 you:

11:55:24 What is a void?

11:55:25 What is the definition of a void?

11:55:30 A. In this context, a void is a hole or a
11:55:40 location where there's no solid material. And it's
11:55:49 also of sufficient size as to be discernible with
11:55:56 appropriate magnification to one of ordinary skill in
11:56:01 the art.

11:56:01 Q. And what's the sufficient size?

11:56:07 How do you other define that of a void?

11:56:10 A. Varies with the power of the microscope
11:56:13 being used.
11:56:18 Q. So are you saying that a certain -- that
11:56:21 two different microscopes with two different powers
11:56:25 may give you different readings about the sizes of the
11:56:30 same void?
11:56:31 A. No.
11:56:32 I'm saying that two different
11:56:35 microscopes will have different resolution or ability
11:56:40 to discern. That one microscope, the smallest point
11:56:47 source, it can resolve, and display might be a
11:56:53 millimeter by a millimeter and another might be a
11:56:58 tenth of a millimeter by a tenth of a millimeter in
11:57:02 dimensions.
11:57:03 Q. I see.
11:57:04 And for a capacitor represented
11:57:08 schematically in Figure 9A, what is the required
11:57:12 resolution for that examination?
11:57:20 A. The required or minimum resolution would
11:57:23 vary with the purpose for which we were examining the
11:57:28 capacitor.
11:57:31 Q. What would be those purposes?
11:57:36 Could you give me the purposes and their
11:57:40 requisite resolutions?
11:57:45 A. There are a range of purposes. I would

11:57:51 count more than five.

11:57:55 And I cannot off the top of my head list all of the likely purposes in each required minimum or resolution.

11:58:07 Q. Could you mention the five purposes you have in mind, even without resolutions?

11:58:13 I understand that may be a little taxing.

11:58:20 A. One purpose would be to simply count the number of internal conductive plates and dielectric layers.

11:58:37 This part is made correctly per the design. If the design was ten dielectric layers and four conductive plates, I would look at it at a pretty low magnification and just do counting.

11:58:55 Q. Okay.

11:58:58 A. Another purpose would be to look at the quality of what is known technically to one of ordinary skill in the art of registration.

11:59:20 Figure 9A shows plates conductive, electrical plates, coming in -- some of them coming in from the left with the ends ending before they get to the conductive layer on the opposite side.

11:59:41 And likewise, from the right-hand conductive layer, plates ending -- plates going to the

11:59:48 left, but again, ending short of that contact.
11:59:54 I would be interested in how well those,
11:59:58 shall we say, buried ends -- where they do not go all
12:00:02 the way to make contact with the conductive layer on
12:00:05 the external surface on the opposite side -- and I
12:00:12 would be interested in how well those buried ends line
12:00:17 up.
12:00:19 Q. Against each other?
12:00:22 A. Against each other.
12:00:23 And also, whether any of them get very
12:00:25 close to the opposite layer for which they're not
12:00:28 supposed to contact.
12:00:31 Q. I see.
12:00:34 And what would be the --
12:00:37 What would happen if they come too close
12:00:39 to that opposite contact they're not supposed to
12:00:43 contact?
12:00:43 A. That's a potential defect that could
12:00:46 cause a capacitor to short.
12:00:48 Q. Okay.
12:00:48 A. To electrically short.
12:00:52 Q. Meaning that it could develop a path,
12:00:56 electrical path to that electrode?
12:00:59 A. Well said.
12:01:00 Q. If it's too close?

12:01:02 A. If it's too close, it might be too easy
12:01:05 to develop an electrical path and short.
12:01:07 Q. And what's a "too close" in the context
12:01:11 of this Figure 9A?
12:01:13 What would you say that too close of a
12:01:15 distance is?
12:01:18 A. That too close would vary with the
12:01:23 quality of the seams.
12:01:29 If we had very few voids or gaps and the
12:01:32 seams were a very good quality, I could probably live
12:01:37 with 5 to 6 milli-inches under normal voltage ratings
12:01:49 of the capacitor, and under normal reliability demands
12:01:56 of a capacitor.
12:01:58 Q. By the quality of seams, what do you
12:02:09 mean by quality of seams?
12:02:12 What's that?
12:02:17 A. When I am sintering, I'm sintering to
12:02:29 produce a usable capacitor, as we've stated before,
12:02:36 that has two aspects: That has a structural integrity
12:02:40 aspect and it has an electrical aspect.
12:02:48 And I want for there -- for it to be
12:02:53 very difficult for as we've said one of the buried
12:02:58 ends to contact an external conductive layer of
12:03:02 opposite polarity.
12:03:15 Q. And how does that property of being

12:03:19 sufficiently separated of the burried-end electrode,
12:03:26 the electrical conductor being sufficiently separated
12:03:29 from the outside contact of opposite polarity, how
12:03:32 does that relate to the quality of seams?
12:03:41 A. Again, speaking as one of ordinary skill
12:03:43 in the art, I would have experience from the past
12:03:54 production of parts, knowing that the apparent quality
12:04:06 that I see in a cross section of that seam was
12:04:11 sufficient to produce a good and reliable capacitor.
12:04:20 B, if the capacitor was going to be used
12:04:27 in a demanding application such as a heart pacer,
12:04:34 there is a standard test given in a military
12:04:40 specification that's MIL-C-PRF-123.
12:04:47 This has a so-called bias humidity test
12:04:53 in which it is typical and it may be required by
12:05:01 specification for one to take a sample of capacitors
12:05:08 of a batch being built for use under such a
12:05:14 specification, and test them under particular voltage
12:05:21 and humidity conditions over an extended period of
12:05:26 time to see whether such a capacitor shorts or not,
12:05:31 electrically shorts.
12:05:34 So it's a workmanship test in some ways
12:05:38 for the quality of that seam.
12:05:45 Q. I'm not sure I follow.
12:05:48 Let's probably explore it a little more.

12:05:51 So what is a seam, without regard to its
12:05:54 quality?
12:05:55 Let's define the "seam" first. Maybe
12:05:58 we'll discuss it --
12:05:58 A. Sure.
12:05:59 A seam is in this context, as one who
12:06:06 designs and manufacturers capacitors would understand,
12:06:11 a seam would be formed whereby I had two layers of
12:06:21 green tape, of unfired tape -- by "tape," again we
12:06:26 mean ceramic dielectric powder in a polymeric
12:06:33 binder -- which were pressed together. This joint of
12:06:37 pressing is a seam.
12:06:39 Q. Okay.
12:06:40 A. The sintering operation is designed to
12:06:45 interlock these two layers such that they're not able
12:06:51 to be broken easily apart in such that I cannot get
12:06:57 moisture from the outside to the inside of the
12:07:01 capacitor.
12:07:08 Q. And so when you're talking about two
12:07:12 layers of dielectric, you're saying it's the seam
12:07:15 between two layers of the dielectric.
12:07:18 So you're sticking one layer of
12:07:21 dielectric up on top of another layer of dielectric,
12:07:23 and you're concerned about the boundary between two
12:07:29 separate layers and whether it exists after it's

12:07:32 sintered.
12:07:33 Is that your understanding?
12:07:35 A. That's part of it.
12:07:36 Q. Okay.
12:07:37 A. The other part is that we may have an
12:07:41 internally conductive layer called an electroprinted.
12:07:46 And there may also be -- there will be a
12:07:48 seam between that -- the top surface of that printed
12:07:52 conductive layer and the bottom surface of the ceramic
12:07:56 or dielectric tape stacked upon it.
12:08:01 Q. Are these different types of seams, or
12:08:05 are they the same seam?
12:08:08 A. They are different types: One would be
12:08:12 a ceramic to ceramic seam when fired. The other would
12:08:16 be a ceramic to metal seam when fired.
12:08:22 Q. I see.
12:08:24 Would you consider --
12:08:27 Assuming that this piece of paper in
12:08:30 front of you, which is first page of Exhibit 2,
12:08:35 assuming that is a layer, a single layer of
12:08:41 dielectric --
12:08:41 A. Fired or unfired?
12:08:46 Q. In a green state.
12:08:47 A. Okay.
12:08:47 Q. -- and upon that layer of dielectric,

12:08:51 you print a metal layer for a conductor --
12:08:57 A. Yes.
12:08:57 Q. -- and there is nothing on top of that
12:09:01 metal layer.
12:09:02 A. Okay.
12:09:02 Q. Would the boundary between the
12:09:08 electrical layer on the same plane and some margin
12:09:13 between remaining dielectric and the plate be
12:09:16 considered a seam, or is it --
12:09:23 A. Might I sketch on a --
12:09:27 Q. I --
12:09:27 A. Or better if you would sketch so I can
12:09:29 understand your question.
12:09:33 Q. Very well.
12:09:35 Here is a green layer of dielectric.
12:09:39 Here is a printed metal layer.
12:09:45 And I'm talking about these lines on the
12:09:50 same plane, which is a boundary between metal and the
12:09:56 remaining dielectric on the same -- in the same layer
12:10:00 on which the --
12:10:02 A. Seams would not apply to that.
12:10:04 Q. How would you call that -- those
12:10:06 boundaries?
12:10:07 A. Margins. Just exactly what you did.
12:10:09 Q. And would you --

12:10:15 Can you label this drawing --
12:10:19 We can put an Exhibit 4 on it so we
12:10:26 can --
12:10:26 I'll do that for you.
12:10:27 A. Thank you.
12:10:27 (Whereupon Exhibit 4 was marked for
12:10:27 identification)
12:10:27 BY MR. SLONIM:
12:10:28 Q. If you could label the dielectric layer
12:10:33 with a let's say a Number 1. The green dielectric
12:10:40 layer as 1.
12:10:45 A. 1. And I will say this is
12:10:54 representative of green (unfired) dielectric layer.
12:11:11 And I would label this area 2. 2 is
12:11:19 representative of screen-printed electrically
12:11:40 conductive layer.
12:11:46 Is that --
12:11:47 Q. That's right.
12:11:48 And can we use a green pen, and could
12:11:53 you show me the margins that are -- that you've
12:11:57 testified about before?
12:12:02 Could you draw the green line along all
12:12:05 the circumference of the margins or whatever the
12:12:08 perimeter of the margin --
12:12:11 A. Can I cross hatch in green?

12:12:14 Q. Let's cross hatch in --
12:12:19 What would you be --
12:12:20 You can cross hatch in green.
12:12:22 Let's see. What would that be?
12:12:30 A. That this area here of 1, after we
12:12:34 subtract the area of 2 from it, would be the margin.
12:12:46 I'll just say "cross-hatched."
12:12:51 Q. And that is the margin of the dielectric
12:12:56 that is not covered by the metal layer?
12:13:01 A. Yes.
12:13:01 Q. And let me then do --
12:13:06 I will use a red pen to --
12:13:11 And the boundary between metal and
12:13:15 dielectric that I am coloring, those lines that are
12:13:23 the boundaries between the margin and the metal.
12:13:26 How would you call those boundaries,
12:13:28 just that line, where there is a -- where I guess
12:13:32 metal meets dielectric?
12:13:35 MR. SCHATZ: I'm going to object. That's
12:13:37 vague, "where metal meets dielectric."
12:13:40 It is not accurately represented by
12:13:42 Exhibit 4.
12:13:42 BY MR. SLONIM:
12:13:44 Q. You may answer if you understand the
12:13:45 question.

12:14:00 A. In a manufacturing environment, knowing
12:14:07 that we have screen printed an electrically conductive
12:14:15 layer, that ink as we might call it, just like we're
12:14:23 screen printing a T-shirt, both forms a bulge -- again
12:14:34 now, we're talking three dimensions -- a bulge out due
12:14:37 to surface tension.
12:14:40 And if it were to wet -- that's a
12:14:44 technical term -- chemically wet, the dielectric as
12:14:52 I'm looking vertically now through this layer, it
12:14:56 would asymptotically flow out --
12:15:03 Q. Into the margins of the dielectric?
12:15:05 A. Yes.
12:15:07 So it would not in reality be a clean
12:15:10 vertical line.
12:15:13 Q. So it would not be exactly a straight
12:15:16 line. It may be a little curved line?
12:15:19 A. Yeah.
12:15:20 And it would be -- have an -- an
12:15:23 irregularity due to differences in degree of wetting
12:15:28 if it did wet.
12:15:29 Q. And I guess it would be a little concave
12:15:34 in shape or --
12:15:35 A. Yes.
12:15:35 Q. In certain characteristics of it?
12:15:38 A. Yes.

12:15:42 So with that -- with that terminology
12:15:46 between us, what is your question?
12:15:51 Q. Where the ink asymptotically approaches
12:15:57 and does touch the dielectric, what is that line
12:16:02 called?
12:16:03 Is that line a seam, or is it not really
12:16:06 a seam?
12:16:06 A. It's not a seam.
12:16:07 Q. And when you were talking about before
12:16:21 about metal powders forming an electrical conductor on
12:16:26 a green dielectric layer by using metal powders, these
12:16:30 were different from printing inks.
12:16:33 Correct?
12:16:33 A. No.
12:16:33 Q. It's one in the same?
12:16:35 A. It's one in the same.
12:16:37 Q. Where --
12:16:39 A. The powders are within a polymeric
12:16:42 binder, and that whole ensemblage acts like an ink
12:16:52 that you can screen print just like you screen print
12:16:56 ink on a T-shirt for decoration of a T-shirt.
12:17:01 Q. Do you know of any other methods other
12:17:04 than screen printing and -- which is -- and the metal
12:17:12 powders, how a conductive layer could be formed on a
12:17:17 layer of green dielectric?

12:17:19 What are the other methods and ways of
12:17:22 doing that called?
12:17:29 A. They are not used in ordinary
12:17:31 manufacturing, so I would have to go beyond one of
12:17:33 ordinary skill in the art to talk about research
12:17:40 and --
12:17:41 Q. That's fine.
12:17:41 So basically, screen printing, which
12:17:45 involved depositing metal powders and then wetting
12:17:49 them chemically, is the primary method of depositing
12:17:55 metal layers on top of green state dielectrics?
12:18:07 A. Yes.
12:18:07 Q. I was about to profess my ignorance that
12:18:11 I thought those two were different. And now I
12:18:13 completely understand that it's one in the same.
12:18:16 A. Right.
12:18:16 Q. Okay. And when we're talking about --
12:18:22 And then what is the --
12:18:25 When you're saying the --
12:18:34 And then when we're talking about a
12:18:35 quality of seams, we're talking about depositing
12:18:46 another layer of dielectric on top of a green layer of
12:18:51 dielectric with already printed metal layer, and then
12:18:55 we're talking about a seam between the metal and the
12:19:04 dielectric on top of it?

12:19:07 A. That's half of it.
12:19:10 You also get a seam between in the area
12:19:14 of the margin, or if you put blank plates, plates that
12:19:20 have no electroprinted between them, you could get
12:19:25 dielectric to dielectric seams as well as dielectric
12:19:29 to metal seams.
12:19:32 Both are two different types of seams
12:19:34 that are ordinarily experienced.
12:19:38 Q. And how do you define a quality seam
12:19:43 between metal and the layer of dielectric on top of
12:19:47 it?
12:19:47 What is a quality seam in that context?
12:19:51 What does that mean to you?
12:19:54 A. Okay. Let's go a level of greater
12:20:03 detail in our discussion.
12:20:07 We have talked about interconductive
12:20:14 plate or an electroplate. And we have mentioned that
12:20:22 they consist of metal powders and polymeric materials
12:20:28 to form a binder to make it usable.
12:20:32 In addition, they quite often contain
12:20:37 5 to 10 percent of the same ceramic that's being used
12:20:44 as a dielectric.
12:20:52 The interconductive layer or electrode
12:20:58 after firing, if we were to by some means expose the
12:21:02 surface so we could look at it, it forms instead of a

12:21:08 solid plate, it forms a lacy like structure in two
12:21:15 dimensions such that there are holes or voids.
12:21:21 Q. The metal layer, itself, has --
12:21:23 A. The metal layer, itself.
12:21:25 Q. -- has voids and a laced structured,
12:21:31 l-a-c-e-d?
12:21:32 A. Lacy.
12:21:32 Q. Lacy.
12:21:33 A. As in Irish linen lace.
12:21:37 Q. Okay.
12:21:43 A. So it's not a fully-densed sheet like
12:21:45 the cover of --
12:21:48 If I had a piece of metal here -- fine.
12:21:52 It is a two dimensional lacy structure with holes in
12:21:57 it, large-size holes, relatively.
12:22:05 The theory is that between the top
12:22:18 surface of Layer 1 in Exhibit 4, we would get ceramic
12:22:31 grain growth -- now, we're using ceramic as our
12:22:38 dielectric in this case -- through the holes in the
12:22:44 electrode layer.
12:22:46 And we would have contact between those
12:22:49 grains coming through the holes in the electrode layer
12:22:53 to the surface of the bottom surface of the ceramic
12:22:57 layer above it.
12:23:00 And that these grains, as well as

12:23:05 chemical interaction between the metal and the
12:23:10 ceramic, would form jointly the strength we need to
12:23:16 hold this brick or chip or array of bricks and chips
12:23:21 together.
12:23:24 So I've gotten distracted from your
12:23:27 original question.
12:23:29 Q. No, I think you've explained it --
12:23:32 I think I've probably forgot my
12:23:35 original, question but I think you've explained the
12:23:38 chemistry of it, the growth of dielectric pretty well.
12:23:47 And so when we say we're concerned about
12:23:49 a quality of seams, what is the quality of seams in
12:23:55 that context where I guess dielectric is growing
12:23:59 through the voids and gaps in the metal layer?
12:24:04 How do you quantify that quality?
12:24:08 A. So we're talking specifically about
12:24:14 internal metal dielectric seams as one of ordinary
12:24:21 skill in the art would understand it.
12:24:26 And there are two aspects of this
12:24:34 internal seam, which must be there for this capacitor
12:24:37 to be usable:
12:24:38 One is we must have enough strength that
12:24:43 the part won't simply separate like a deck of cards.
12:24:48 Two is that we do not want a path, a gap
12:24:59 along that interface, to any outside layer that would

12:25:05 allow metal to get in and humidity from moisture, and
12:25:10 the capacitor could then short, electrically short.
12:25:15 Q. Wouldn't you prevent that moisture from
12:25:19 getting outside -- from outside into the inside of the
12:25:22 dielectric body of the capacitor by putting contacts
12:25:26 around it, I guess, metal layers around the sintered
12:25:33 dielectric body, and therefore, encapsulating it and
12:25:36 preventing --
12:25:37 A. That encapsulates some of the area.
12:25:41 You can't have a metal contact all the
12:25:43 way around, or you're shorting out the capacitor,
12:25:48 itself.
12:25:53 Q. Because all of the sides would be at the
12:25:56 same polarity?
12:25:57 A. Yes.
12:25:57 Q. Okay. I haven't thought about it.
12:26:01 A. In Figure 9A in the patent --
12:26:04 Let me go back to the patent.
12:26:06 Q. All right.
12:26:07 A. That's Exhibit 3.
12:26:09 Q. Uh-huh.
12:26:14 A. And this is -- Sorry.
12:26:15 Prior Art, Figure 8A, we have talked
12:26:18 about external conductive plates 21 and 22. They are
12:26:26 of opposite polarity, and cannot be in electrical

12:26:30 contact or you've got no capacitor, in a practical
12:26:36 sense.

12:26:36 Q. How close can they come to each other
12:26:39 without a danger or your practical danger of having --
12:26:46 of shorting the capacitor?

12:26:48 How close can they be together?

12:26:50 A. That's a relative value related to the
12:26:56 voltage of the capacitor, related to the likelihood of
12:27:06 there being random conductive debris on that surface,
12:27:09 and whether we might want to use those terminations to
12:27:14 form a fringe effect capacitor.

12:27:18 So we've got a number of variables. I
12:27:21 cannot give you a single value of closeness.

12:27:29 Q. Can you give me a formula?

12:27:32 A. No.

12:27:40 Q. Can you define it in some other way that
12:27:44 I would arrive at a number?

12:27:50 A. I can say for a particular design,
12:27:58 voltage, capacitance, materials, number of layers,
12:28:05 applications -- so that's like ten variables -- for a
12:28:09 particular design, I could then put samples of a group
12:28:14 of parts to a test, and I would test whether it did
12:28:19 what I wanted it to do and whether it did what I
12:28:24 wanted it to do for enough thousands of hours such
12:28:27 that I knew it was reliable.

12:28:32 Q. If I wasn't -- If I were not concerned
12:28:34 about reliability and I just wanted to make my design,
12:28:40 would you be able to give me a formula, then, for how
12:28:46 close I can put these contacts to each other without
12:28:50 the danger of shorting the capacitor?
12:28:53 MR. SCHATZ: Objection.
12:28:54 Are you referring to a known specific
12:28:56 application, or multiple applications in general?
12:28:56 BY MR. SLONIM:
12:29:02 Q. You may answer if you understand the
12:29:04 question.
12:29:11 A. If I put on my hat as a designer of
12:29:19 multi-layer capacitors for general purpose use --
12:29:27 iPods, but not heart pacers -- I would -- rather than
12:29:37 a formula, I'd say this is a design I've used for the
12:29:41 same product in the past and it has worked. And I'd
12:29:47 simply use that same design in the future.
12:29:52 And that design would have tolerances.
12:29:59 That specific design would have a designed gap with a
12:30:03 certain amount of plus or minus tolerance. And that
12:30:07 would have worked for this manufacturing facility,
12:30:12 these materials and that design.
12:30:15 So I can't give you a number.
12:30:18 If I were a designer, I'd go in and I'd
12:30:20 have a library of 1,000 designs and I'd pick the one

12:30:25 that best met everything. And that would have a
12:30:30 nominal value and a plus or minus value for
12:30:36 separation.
12:30:37 And, of course, this would be -- these
12:30:39 people would not be using fringe effect capacitors.
12:30:43 They'd simply want to make sure we did not have any
12:30:46 chance of there being an electrical short across the
12:30:49 top surface.
12:30:50 Q. So for a general purpose capacitor,
12:30:55 would you say a 10 mil separation between contacts --
12:31:00 A. No, there is no single amount --
12:31:05 That's right. It would vary with
12:31:07 whether I have a capacitor rated at 5 volts or
12:31:11 500 volts.
12:31:12 Q. What would you expect the value to be if
12:31:15 a capacitor is rated at 5 volts with that separation?
12:31:19 A. It would vary with the dielectric, the
12:31:23 thickness of the dielectric.
12:31:24 So I would not speculate what the
12:31:27 current library value is or even what it existed in
12:31:33 the late 1990's, because they're always being updated.
12:31:40 Q. And where is that library of capacitors
12:31:43 located?
12:31:44 A. That library of designs would be held
12:31:47 within each capacitor manufacturing facility.

12:31:53 Q. Is it like a regular library, you know, Los Angeles Public Library, where you would walk into that library of capacitor designs and it would be on the shelves?

12:32:07 A. It would tend to be all electronic in terms of a file which says if I want a 5-volt rated capacitor of so much capacitance and so much tolerance here and so much insertion loss, out of these 15 variables, I'd go to this design that I made in the past. And I'd look up that, and that would give me all of the nominal dimensions.

12:32:34 Q. And would you say that let's say two designers of the same manufacturing company are looking for a design for 5-volt rated capacitor, and they had a library of 50 previously manufactured 5-volt rated capacitors, would they select the same one, the same design out of the 50?

12:32:59 Are they doing it independently?

12:33:03 A. They're doing it independently. But there are so few designers, that you'd tend to get the same person doing a particular family of designs.

12:33:17 And it might vary with how sensitive he was to whether the immediate past manufacturing had caused a lot of defects or past extremely smoothly as to how conservative he'd be with the next run.